Contractors and Engineers

magazine of modern construction

NOVEMBER 1958

A Buttenheim Publication

LIBRARY

NOV 10 1958

SCIENCES

Concrete placing for new plant

Page 50

(Photos by Stewarts for Exchange National Bank)

View of Air Force Academy from a helicopter. Main buildings of Academy in background, at foot of Rampart Range of the Rockies.

U.S. Air Force Academy

COLORADO SPRINGS, COLO.

Its network of roads is paved with durable Texaco Asphaltic Concrete

Although it is interested primarily in air transport, our new Air Force Academy could not function efficiently without its network of more than 50 miles of 4-lane and 2-lane roads.

The wearing surface, base and subbase constructed on these roads provide a pavement which is flexible from top to bottom. It consists of a 6-inch gravel subbase, covered by a 4-inch crushed stone base. After the base is primed with a medium-curing Texaco Cutback Asphalt, it is topped by a wearing surface of resilient, rugged Texaco Asphaltic Concrete 2 to 2½ inches thick.

Thanks to the flexible character of this type of pavement, it maintains complete contact with the supporting subsoil at all times. This is why flexible paving is able to withstand heavy traffic longer than rigid paving and at a lower upkeep cost.

Texaco Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils offer the road builder a wide choice of pavement types. These range from heavy-duty paving for Interstate Highways to inexpensive asphalt surface-treatments for suburban residential streets. Helpful information on all types of asphalt construction for roads, streets, airports and parking areas is supplied in two free booklets. Write our nearest office for copies.

CONTRACTOR—Peter Kiewit Sons' Company, Denver, Colo.

THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York 17

Boston 16 (20 Providence St.) • **Chicago 4** (332 So. Michigan Ave.) • **Houston 1** (720 San Jacinto St.)
Jacksonville 1 (P.O. Box 749) • **Denver 1** (P.O. Box 2100) • **Philadelphia 2** (1411 Walnut St.)
Richmond 11, Va. (P.O. Box 1379) • **Minneapolis 3** (Groveland Ave.-Clifton Pl.)

TEXACO REG. T. M.

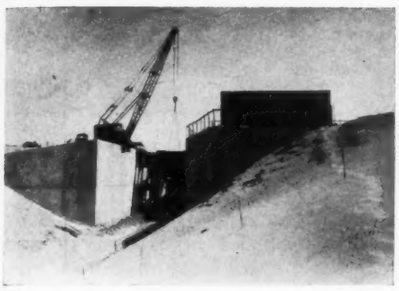
TEXACO ASPHALT

For more facts, use Request Card at page 18 and circle No. 201

CONTENTS

NOVEMBER 1958

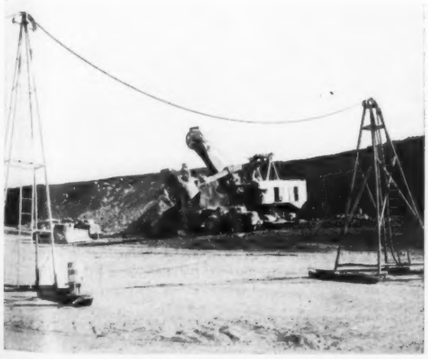
Contractors and Engineers
magazine of modern construction



Erecting missile launching complex. Page 38

Paving crews lay plant floors. Page 50

Fast-working concrete-paving spreads. Page 58



Giant earthmovers at Oahe Dam. Page 78

AIRPORT
10 Blades speed clearing of new jet airfield

BUILDINGS
30 Steel goes up on ultramodern convention center
50 Airport paving methods used for floors of plant buildings

DAMS AND FLOOD CONTROL
5 Lock-gate leaves plumbed by new prestressing method
74 Three earthmoving methods used on Oahe Dam spillway job
78 Earthmovers roll in top gear to finish dam embankment

GENERAL
12 Concrete: Poland's choice for reconstruction
25 Rebuilt rollers, idlers add to dealer's profits
35 Control off-highway tire cost with proper maintenance
38 Building a missile launching base
84 Dredge builds high fill for railroad bridge near dam

HIGHWAY
58 One rig does transverse finishing, floating for roadway

MANAGEMENT
66 Planning and production: job-site equipment

MEETINGS
6 PCI convention tackles problems of its industry
22 Equipment uses, trends take highway conference spotlight
54 Large Dams Congress meets in New York

PRODUCT PARADE
87 Description of new equipment and material
116 Listing of available literature

DEPARTMENTS
47 Avoid Legal Pitfalls
70 Construction Camera
83 Convention Calendar
24 Distributor Doings
4 Editorial
72 Labor Review
34 Manufacturer Memos
73 Names in the News
120 Surveying Washington

Editorial

What this country needs is

A Good Convention Hall

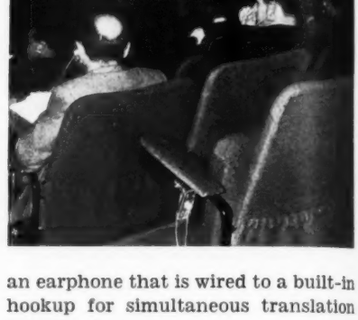
In making the above declaration, we have in mind particularly the holding of a technical engineering convention where the number of delegates does not exceed 1,500 or so. The convention cities of the United States are just not equipped with the basic facilities to stage such gatherings in the most efficient manner. We are not now considering big national conventions like those the American Legion or the major political parties conduct; most of our large cities have excellent auditoriums for holding crowds of 12,000 or more. Detroit is building such a mammoth facility right now. (See page 30.) But the need of a meeting place for smaller technical groups was demonstrated at the recent Sixth International Congress on Large Dams in New York City. (See page 54.) More than 800 dam builders representing 44 countries came to the United States for the conference, last held here in 1936.

Convention headquarters was in one of Manhattan's largest hotels, and the working sessions were conducted in a spacious dining hall that embraced enough physical space to provide a seat for everyone attending. As might be imagined, the individual seats were the movable, straight-backed hard-bottom variety common to all hotel banquet rooms. And the main floor of this large rectangular-shaped room was typically flat. Even with a raised platform, placed midway of one long side of the hall, delegates at the far ends had trouble in seeing the speaker. A temporary screen for slides had been set up at the rear of the platform, but the projector could not be positioned far enough back to produce large-size pictures without having them run off the screen onto the wall.

No facilities were available to project other material for illustration on the screen. One speaker from India tried, without much success except with delegates seated in a few front rows, to discuss a dam project by means of a blueprint which he had to hold in his hands. The language barrier at the conference was overcome by translations into the two conference tongues. These translations were transmitted by means of portable equipment brought to the hotel and installed the day before the conference opened. Delegates wore earphones and carried battery-powered receiving equipment strung around the neck.

These facilities were in sharp contrast to those provided at another world-wide meeting—the Third International Prestressed Concrete Congress—held in Berlin this past May. Although nearly destroyed during the war, Berlin today can boast one of the world's top convention facilities in its modern Congress Hall, which, incidentally, was a contribution of the United States through the Benjamin Franklin Foundation.

Congress Hall in Berlin, of course, was designed and built specifically for large-scale conferences. Its main auditorium with sloping floor has 1,252 comfortable seats, each equipped with



an earphone that is wired to a built-in hookup for simultaneous translation into five languages.

The ample-sized stage or platform is equipped with a screen 18 feet high by 19 feet wide. (See photo at left.) Films or slides are projected from booths high along the rear wall. The speaker may talk from a lectern at the side of the screen, or he may use a desk, placed front and center, equipped with a Leitz unit for projecting drawings, writing, or other visual aids on the screen behind him. The air-conditioned building is also equipped for radio and television broadcasts, and has teleprinter and radio-photo facilities.

Congress Hall also provides a reception area, lecture room, restaurant, exhibition hall, seven conference rooms, and its own post office. In addition to all this, there are adequate parking facilities around the building, even though it is only a 12-minute bus ride from the hotel district.

Berlin's Congress Hall is kept busy throughout the year with many meetings and conferences serving various professions and industries. From where we sit, it would seem that the United States could use one or more similar structures to advantage.

CONTRACTORS AND ENGINEERS

A Buttenheim Publication

470 Fourth Ave., New York 16, N. Y

President and Publisher • Donald V. Buttenheim
Editor • William H. Quirk
Field Editors • Ralph Monson, Anthony N. Mavroudis, William A. Allen
Assistant Editors • William J. Dowdell, Edward Mannix
Feature Editor • William T. Darden
Associate Editor • Catherine J. Hearn

Chairman of the Board • Edgar J. Buttenheim
Vice President • George S. Conover
Treasurer • G. E. Carney
Pacific Coast Manager • Albert T. Miller
Southern Sales Manager • Curtis R. Buttenheim
Production Manager • Edna A. Jones
Research Director • Frank Kypreos
Art Director • Peter Ciramella
Asst. Art Director • James B. Reilly

BRANCH OFFICES

470 Fourth Ave., New York 16, N. Y.
MUrray Hill 5-9250
Myron MacLeod
Roy T. Wagner
David Hecht

Chicago 6, Ill. 2100 Daily News Bldg.
FInancial 6-4611
George S. Conover
William J. Adams
Robert Bormann

Cleveland 14, Ohio 1814 Superior Bldg.
CHerry 1-1755
Robert C. Burton

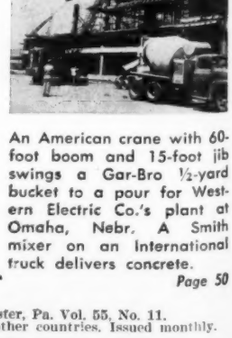
Lookout Mountain, Tenn. 121 North Hermitage
TAylor 1-2853
Curtis R. Buttenheim

Los Angeles 27, Calif. 1870 Hillhurst Ave.,
NOrmandy 5-5143
Albert T. Miller
James Stack

Associated Publications
The American City · The School Executive · MART

Acceptance under Section 34.64 P. L. & R. Authorized at Lancaster, Pa. Vol. 55, No. 11.
$5 a year, $1 a copy in the United States and Canada. $8 a year in other countries. Issued monthly.

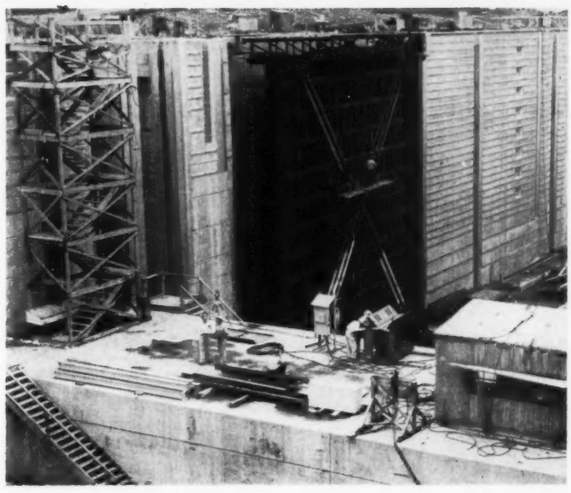
©1958 by the Conmart Publishing Corp.
A subsidiary of **BUTTENHEIM PUBLISHING CORP.**



An American crane with 60-foot boom and 15-foot jib swings a Gar-Bro ½-yard bucket to a pour for Western Electric Co.'s plant at Omaha, Nebr. A Smith mixer on an International truck delivers concrete.

Page 50

At Markland Locks and Dam, near Madison, Ind., five asbestos-covered tension bars are prestressed by a Hobart high-frequency induction heating unit, which is at the left of the construction shed.



Heat prestresses tension bars to plumb lock-gate leaves on Markland Locks and Dam

The method that Penn-Southern Construction Co., Pittsburgh, Pa., specially devised to increase the tensile strength of tension bars to plumb lock-gate leaves is as modern as the new Markland Locks and Dam project the firm is working on. The project, under construction near Madison, Ind., will replace five smaller locks on a 90-mile stretch of the Ohio River between New Richmond, Ohio, and the new Markland locks.

Each of the lock gates consists of two leaves, each weighing 250 tons. The leaves are of all-welded construction and are equipped with diagonal tension bars to keep them plumb. Three tension bars run diagonally from the top quoin side of the leaf to the bottom miter side, and two tension bars run diagonally from the top miter side to the bottom quoin side of the leaf.

In a test setup, tension bars are wrapped in paper-base asbestos and asbestos-covered copper wire and connected in series to a Hobart heating unit. One-half of a tension bar is expanded over 1 inch in an hour to increase the tensile strength of these bars to 20,000 psi.

Prestressing work

When the contract for fabricating and installing gates on the locks was awarded to Penn-Southern, their engineers came up with the idea of expanding or prestressing the tension bars with induction heat, instead of using steamboat jacks at different points on the leaf, before tightening the turnbuckles on the tension bars. The contractor, in collaboration with induction-heating engineers from Hobart Bros. Co., Troy, Ohio, made a test setup with the bottom halves of three tension bars laid in a horizontal position on wood beams.

One thickness of paper-base abestos insulation was wrapped around each of three tension bars. Coils of No. 2 strand asbestos-covered copper wire were then wrapped around the abestos-insulated 1½-inch × 8-inch × 32-foot steel tension bars and connected in series to a Hobart 50-kw 400-cycle high-frequency induction heating unit. From the test, it was found that one-half of a tension bar could be expanded over ⅝ inch in 30 minutes and over 1 inch in an hour. As the heat expands the bars, the turnbuckles are tightened. THE END

Look for this nearby Goodyear dealer sign for better tire values—better tire care.

New SUPER HARD ROCK LUG

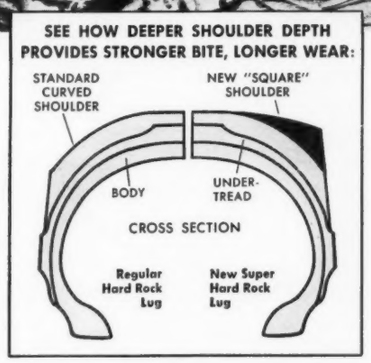
Tubeless or Tube-Type

This new SUPER HARD ROCK LUG is *truly* wide-base, from tread–to shoulder–to bead!

BONUS RUBBER–and plenty of it–*right where you need it most.* Result? *Super* traction, *super* flotation, *super* stability–and *super* resistance to shoulder snags and cuts.

Best news of all: *SUPER HARD ROCK LUG costs no more than conventional wide-base off-roaders!* Get more tire for your money! Get this great new wide-base yardage champ at your Goodyear dealer's now.

Goodyear, Truck Tire Dept., Akron 16, Ohio.



Like steel, tire cord must be tempered to be tough. Goodyear's exclusive 3-T process, involving Tension, Temperature and Time, triple-tempers cord to make it TRIPLE-TOUGH–to give you longest tire life, lowest cost-per-yard!

60th ANNIVERSARY

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

For more facts, use Request Card at page 18 and circle No. 202

The 1959 president of PCI is Peter J. Verna, Jr., president of Concrete Materials Co., Charlotte, N. C.

Prestressed Concrete Institute tackles problems of fast-growing industry

The prestressed-concrete industry is growing so fast it hurts. Relief for these "growing pains" was the main concern of the Fourth Annual Meeting of the Prestressed Concrete Institute held in Chicago in late September. Young men of a young industry tackled the problems with vigor during the 4-day convention.

Chief among the problems of the growing industry is selling. The prestressers have developed a good product. Now, they must tell the world about it. They must show architects and engineers how to design in prestressed concrete. They must convince highway officials of the dependability of their product. They must tell the general public about the economy, durability, and beauty of prestressed-concrete structures.

The panelists and speakers also tackled the problems of quality control and standardization. To insure uniform quality within a plant, they suggested setting up a testing lab and careful inspection procedures.

To protect the industry from the damaging influence of products from inferior plants, the board of directors of PCI approved a tentative set of standards for prestressed-concrete plants. With the consent of member companies, PCI plans to set up an inspection agency to enforce the standards.

700 attend convention

Some 700 members and guests of the Prestressed Concrete Institute listened with interest to discussion of these problems. Most of the delegates came from this country, although there were some from as far away as Cuba, Hawaii, South America, and Canada. At the Edgewater Beach Hotel, members found many interesting exhibits among the 37 booths occupied by manufacturers of equipment serving the prestressed-concrete industry.

The pattern of panel discussions and speeches was varied by a visit to the Research and Development Laboratories of the Portland Cement Association in Skokie, Ill. At the recently completed Structural Laboratory building, delegates saw for themselves how prestressed products were being tested. At the convention, the PCA offered its help in solving technical problems of the prestressed-concrete industry.

Make the Grade in Profits

Bring NOWness to Your Operations ...with ASSOCIATES Equipment Financing

To earn maximum profits, replace and upgrade your equipment when needed, without depleting vital working funds . . . *finance it through Associates!*

Associates financing experts will work closely with you and your equipment dealer to plan arrangements and terms best adapted to your own situation. Whether you select straight-line financing, or an accelerated method, Associates will speed-the-deal for you with a minimum of red tape . . . through one of over 200 local branch offices.

Contact your equipment dealer now for further information on Associates financing. Send coupon today for "*Money to Grow On*" . . . it's free!

NOW . . . expand and meet competitive situations by purchasing new equipment when it's needed.

NOW . . . benefit from the cost-saving advantages of new equipment . . . pay for it from additional profits.

NOW . . . make necessary additions and replacements without suddenly draining vital working funds.

NOW . . . take advantage of accelerated write-off methods of figuring depreciation in the financing of your equipment.

NOW . . . enjoy greater operating efficiency; reduce maintenance and operating costs by updating and upgrading equipment.

SEND FOR YOUR FREE COPY TODAY!

"Money to Grow On" is a new forty page book which explains the "mechanics" of equipment financing, fixed asset loans, advances for special situations and other Associates financing services.

Associates
DISCOUNT CORPORATION
Associates Building, South Bend 24, Indiana

ASSOCIATES DISCOUNT CORPORATION
Dept. 202A, Associates Building, South Bend 24, Indiana
☐ Please send my free copy of "Money to Grow On."
☐ Please send information on Associates financing:
Type of equipment _____
Name _____
Title _____ Company Name _____
Address _____
City _____ State _____

For more facts, use coupon, or Request Card at page 18 and circle No. 203

George DeMent, Commissioner of Buildings, City of Chicago, welcomes the 700 delegates at the opening session of the Prestressed Concrete Institute in Chicago. At the left is Charles Luckman, AIA, Periera & Luckman, Los Angeles, and at right, Ben C. Gerwick, Jr., 1958 president of PCI.

New officers

Elected to head the Prestressed Concrete Institute as president for the coming year is Peter J. Verna, Jr., Concrete Materials Co., Charlotte, N. C. Philip E. Balcomb, American-Marietta Co., La Grange, Ill., was elected vice president, and Jacob O. Whitlock, Midwest Prestressed Concrete Co., Rochelle, Ill., assumed the duties of secretary-treasurer.

The officers will serve the PCI until next year when the convention is held at Miami Beach, Fla., November 1 through November 7.

Stress the sales

The problem of selling the idea of building in prestressed concrete was a big one. Advertising men, marketing professors, and experts within the industry put forth their suggestions.

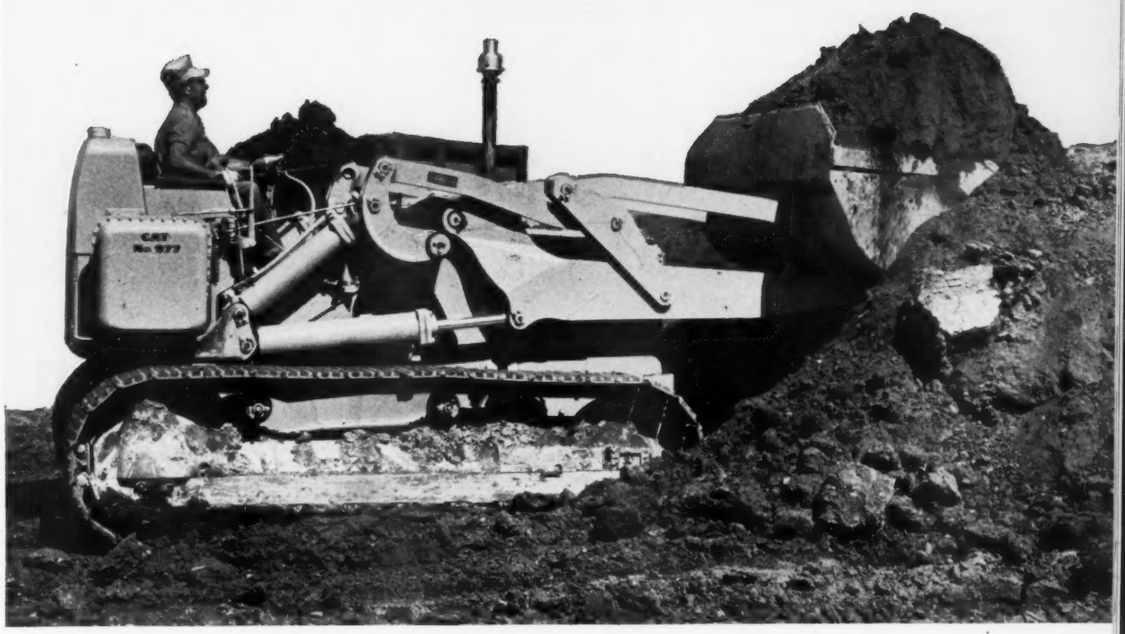
As an advertising man, Jackson Taylor, senior vice president of Lennen & Newell, Inc., New York City, asked that intensive advertising be used to tell people about the advantages of the new product.

Taylor admitted that it would be better for the producers of prestressed concrete to call on all of these people personally and talk with them about the new product. But there are just too many people to reach to do this effectively. There are architects, engineers, contractors, and government officials. All in some way play a part in the decision of how to build. By means of advertising, these various groups could be informed about the economy, the permanence, and the beauty of prestressed concrete as a building material.

Panel members were primarily concerned with educating architects, engineers, and highway officials in the use of prestressed concrete. According to Jack Streblow, Structural Concrete Products Division, Basalt Rock Co., Napa, Calif., these groups could best be influenced by speeches given at their meetings and conventions. A speaker, representing a state prestressing association, is in a position to help his industry by speaking at meetings of architects and engineers. Streblow also suggested that the producer should provide the architect with sufficient data for designing a building with prestressed

(*Continued on next page*)

"WILL OUTPERFORM ANY MACHINE IN ITS CLASS!"



This Cat-built Traxcavator is loading out soil from spoil heap for grade fill and shoulders — loads out 10-yd. trucks, servicing 5 trucks with a 2-mile haul. Handling damp hard-pan, the husky No. 977 operates in 2nd and 3rd speeds and loads 10 yd. in 2½ min., averaging up to 2,000 yd. per 10-hr. day. The Minnesota State Highway job is 5.4 miles long and it calls for an excavation of 840,000 yd. of all classifications.

That's the way Mr. Markham of the E. Markham Construction Co., St. Paul, Minnesota, feels about his Cat No. 977 Traxcavator, shown loading out soil for grade fill and shoulders on a state highway improvement job in St. Paul.

Owner Markham feels that CAT-built equipment is the "most reliable and best mechanically." He says, "Caterpillar Tractor Co. has wisely shown an understanding of the contractors' equipment needs —no fancy do-dads that look good on paper and flop in operation—just down-to-earth improvements that really work."

Dependable, versatile performance is typical of Caterpillar's line of Traxcavators, from the rugged No. 977 to its tough, agile smaller brother, the No. 933. These finely balanced work units are engineered for the *hard* work, with welded steel frames, lift arms and cross braces of strong, box-section construction, and tilt arms of solid steel. They're easy to handle with quick-acting hydraulic controls.

The 50 HP No. 933, as well as the larger No. 955 and No. 977, are available in the new Series E, with extra-sturdy undercarriage for applications which put the greatest stress on your equipment. And the new side dump bucket can be had for the No. 955 and No. 933 Traxcavators. For complete details, see your Caterpillar Dealer. He'll be glad to talk your kind of language in a deal for the best in earthmoving equipment. And he'll back you up on expert service and parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

A NEW DIMENSION IN LOADER VERSATILITY

For more facts, use Request Card at page 18 and circle No. 204

The Container Corp. of America featured a form for making a void in a prestressed box-type girder. Boxes are shipped flat and assembled on the job. Container Corp. personnel are Bob McBride and Earle Wells at left and Richard Johnson at the extreme right. Seated between Wells and Johnson is Charles Wilson, Wilson Concrete Products.

Delegates are stopped at the T. L. Smith booth by the turbine-type mixer that is becoming increasingly popular among manufacturers of precast-concrete components.

(Continued from preceding page)

members. This has to be made available to architects if prestressed concrete is to compete with steel, he said.

Dale Delano, Thomas Concrete Pipe Co., Oklahoma City, believed that the most valuable tool his company has for educating architects and engineers is a complete and detailed brochure. The pamphlet explains what the plant makes, and how the prestressed products can be used in building. Delano was also convinced that architects would choose prestressed concrete over other materials if they knew the price of the concrete members. He said that it was sometimes possible for the producer to give the architect an estimate before a building is designed.

Quality and standards

A few poor beams give a new product a bad reputation. A few inferior plants are a blot on the entire prestressing industry. Panelists tackled this problem, and most agreed on these points:

1. To keep quality within a plant consistently high, a company-owned laboratory is necessary.

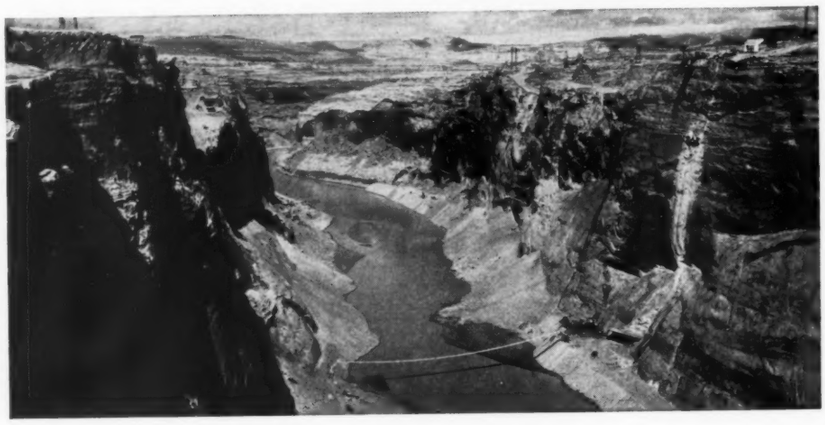
2. In addition to taking frequent cylinders, company inspectors should make frequent checks on conditions affecting the final appearance of the concrete product.

3. To gain uniformity in the finished product, standard procedures must be set up in the plant. Every day, the same methods should be followed; concrete should be placed at the same time each day, and strands should be cut at the same time each day.

To protect the prestressing industry, as well as the buyer, from the products of an inferior plant, the board of directors of the PCI approved a set of standards for prestressed-concrete plants. As set forth in the 11-page pamphlet, "the objective of the regulations is to establish minimum standards for prestressed, precast-concrete manufacturing plants. These standards cover materials used, plant equipment, personnel, design, and central casting yard manufacturing techniques."

Before the program of self-regulation can become effective, member plants must first put up the cash to hire an independent testing agency. Although details for the inspection program have not been worked out,

SECOND LARGEST DAM IN THE U. S., at Glen Canyon, Ariz., will incorporate two of these 2,800 ft. diversion tunnels. Frazier-Davis equipment runs dependably, stays on the job, thanks to the Texaco Simplified Lubrication Plan.



Glen Canyon tunnel borings nearing completion with Texaco Plan

Only 6 lubes needed to keep Frazier-Davis equipment working dependably

This is Frazier-Davis Construction Company's job: to bore the east side diversion and service tunnels, with a combined length of 2½ miles, through the walls of Arizona's Glen Canyon. It's a vital project, part of the Bureau of Reclamation's $760 million development of 10,000 square miles of arid land. On a job as big as the Glen Canyon Dam, on-time completion of every phase is absolutely essential. And that puts a priority on dependable equipment performance.

The Texaco Plan keeps equipment on the job—at lowest cost—by handling all major lubricating problems with no more than six products. A combination of specialized and multi-purpose lubricants assures proper lubrication for each machine, with lower lubricant inventory and less chance for mistakes. For Frazier-Davis, t Texaco Simplified Lubrication Plan has prov to be one of the most economical and depe able ways to get top performance from ev piece of equipment.

Here are the lubricants Texaco recommend for Frazier-Davis:

Texaco Ursa Oil Heavy Duty—keeps engi clean, rings free, valves properly seated for f power.

Texaco Regal Oil R&O—prevents formation rust and harmful deposits in compressor syste

Texaco Universal Gear Lubricant EP—keeps ferentials and transmissions running smoothly low cost.

The interest of a visitor at the American Steel & Wire booth is caught by the B. B. R. V. post-tensioning assembly, which contains 40 wires and has a guaranteed ultimate strength of 235½ tons. The assembly is being used on the 154-foot spans of the Montrose Avenue Bridge that is now under construction in Chicago.

Two big models of Travelifts are demonstrated in a parking lot outside the Edgewater Beach Hotel. The rigs, used for carrying prestressed girders at manufacturing facilities, are made by Travelift & Engineering, Inc., Sturgeon Bay, Wis.

Bureau of Reclamation Photos

it is estimated that the cost for inspection will run roughly at $1,600 per year per plant. If national advertising for prestressed-concrete products is included in this program, the cost will be about doubled.

Prestressed highway pavement

Highway pavements of the future may be prestressed. From the results of an experimental test pavement built by Jones & Laughlin Steel Corp., John J. Murray, development engineer, concluded that longitudinally post-tensioned pavement is practical for highway construction.

The results of the experiment showed that the method of building the pavement in the experiment is practical for field application. When mass-production techniques are used, the construction can be competitive with conventional concrete pavement. The price of the prestressed pavement is estimated to be $6.55 per square yard.

Long-span bridges

With a suitable design and favorable working conditions, construction of a long-span post-tensioned bridge can be more economical than that of a steel bridge. This belief was generally held by members of a panel discussing various long-span post-tensioned bridges in this country and Cuba. The longer spans ran from about 150 to 200 feet. Most of the girders were cast in place on the piers and later post-tensioned.

Prof. Louis P. Saenz, of Saenz-Cancio-Martin, Havana, Cuba, made claim to the longest concrete spans. His consulting firm has designed and built a bridge in Cuba with a 300-foot main span. On the drawing board is a plan for a post-tensioned concrete bridge with a 590-foot span.

THE END

Leschen Wire Rope film

The Leschen Wire Rope Division, H. K. Porter Co., Inc., has released a new sound-color movie, "The Red-Strand", which shows the process of producing finished wire from rod.

Arrangements for showings may be made by writing to the division's Advertising Department, 2727 Hamilton Ave., St. Louis 12, Mo.

aco Marfak Multi-Purpose 2—protects wheel rings, chassis, water pumps against dust, isture and wear.

aco Track Roll Lubricant—prolongs the life of wler mechanisms.

aco Rock Drill Lubricant—guards against r and rust whether drills are running or idle. sk a Texaco Lubrication Engineer to help simplify your lubrication problems and uce costs. Just call the nearest of the more n 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

BRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

For more facts, use Request Card at page 18 and circle No. 205

Trees and undergrowth are cut and felled by a Caterpillar D9 tractor, equipped with a Rome K/G clearing blade and a Fleco protective canopy, to make way for the new Washington International Airport near Chantilly, Va. This is the first civilian airport designed and being built to handle jet aircraft.

Blades speed clearing of new jet airfield

A 9,100-acre tract near Chantilly, Va., is now being cleared and grubbed for the new Washington International Airport—the first civilian airport designed and being built to handle jet aircraft. The clearing contractor, C. J. Langenfelder & Son, Inc., Baltimore, Md., started operations on the $466,000 contract in September.

The federal airport, being built by the Civil Aeronautics Administration, initially will have two north-south parallel runways, each 11,500 feet long. A pair of parallel secondary runways will probably be built in the future to handle expansion requirements as air traffic increases.

Work schedule

The clearing contract is broken down into three phases, which take into account the areas to be cleared and to what degree. About 1,200 to 1,300 acres of built-up wooded area are now being completely cleared and grubbed—including the removal of existing buildings, fences, and tree stumps—for the primary runways and taxiways. This total clearing, being done under phase No. 1, has to be completed within 90 working days.

Work in phase No. 2 involves 5,300 acres and calls for the removal of all buildings, fences, and dead trees over 4 inches in diameter. This area will accommodate the outside taxiway systems.

The third and final phase will require clearing of the terminal area, but with some exceptions. Since this phase will be the last, the contractor may be instructed to leave existing trees within this area for landscaping purposes. This phase is scheduled to begin about 160 working days after the start of phase No. 1.

Langenfelder started the first phase, which calls for complete clearing, with Rome K/G clearing blades mounted on two Caterpillar tractors, a D9 and a D8. These rigs were used on the first two days. Another D9, with the Rome blade attachment, was added on the third day. These rigs cleared and grubbed about 50 acres of wooded area during the first three days of operation.

Clearing trees

Langenfelder plans to supplement the existing equipment on the job with about four or five more tractors. These will be equipped with Rome blades or rakes. At present, the contractor has a Cat D8 tractor equipped with a Fleco rock rake and a Gar Wood tractor equipped with a Rockland brush rake. The rakes are used to grub the cleared areas and to push windrows into fires.

The Rome clearing blades are being used to cut down trees, varying from 3 to 30 inches in diameter, as well as to remove stumps and roots. The trees are generally oak. Those having diameters of from 3 to 6 inches are cut about 8 inches to a foot above the ground by the bottom edge of the blade. Trees this size require only a single pass of the tractor to completely pull out the roots.

TOMORROWS BULLDOZER—TODAY!

"THE BULLDOZER OF THE FUTURE" this is the way one Road Dept. official described the Eimco 105 when he saw it operate on competitive tractor tests. Here, once again, the Eimco 105 Dozer has demonstrated superiority over conventional type tractors. In job after job, the 105 consistently proves that its simplicity of operation, smooth power flow, visibility, maneuverability and reduction in operator fatigue is the difference between marginal production and profitable production.

The work site consisted of a steep incline with rock outcropping in big slabs. The bottom ends of the rocks were deeply embedded and required maximum tractor effort to remove them.

Bulldozing down the slopes, the torque converter drive of the 105 enabled it to pick up a capacity load and move down the slope ahead of the competitive tractors with their outmoded conventional type drives.

Throughout the test — straight bulldozing, removing rocks and maneuvering — the 105 managed everything that came its way and did it with the least amount of operator effort. In direct contrast, the competitive tractor operators were constantly clutching, changing gears and braking to accomplish their tasks.

Eimco's Unidrive constant mesh transmission gives variable speed independent track control without clutching and shifting. Let us demonstrate this tractor.

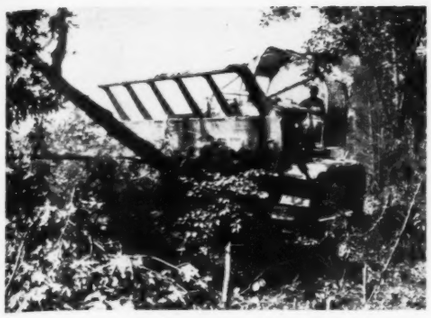
THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

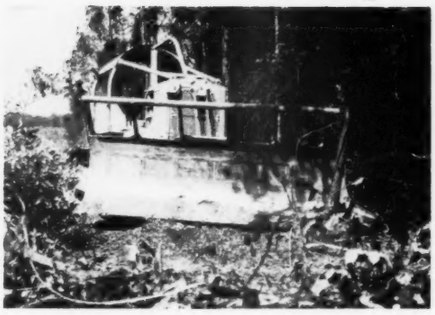
New York, N.Y. Cleveland, Ohio · Chicago, Ill. London, England · San Francisco, Calif. Gateshead, England · El Paso, Tex Paris, France · Birmingham, Ala. Milan, Italy · Duluth, Minn. Johannesburg, South Africa · Pittsburgh, Pa. · Seattle, Wash.

B 330

For more facts, use Request Card at page 18 and circle No. 206



A falling tree, cut down by the Rome blade on the D9, will be dozed into a windrow. Across the top of the blade is a push-bar, which enables the tractor operator to control the direction of the tree's fall.



Small-diameter trees are cut about 8 inches to a foot above the ground by the Rome blade. Trees from 3 to 6 inches in diameter require only a single pass of the tractor to pull out the roots.

A Gar Wood tractor with a Rockland rake grubs to remove undergrowth. C. J. Langenfelder & Son, Inc., Baltimore, Md., is the clearing contractor for the airport being built by the CAA.

Larger-diameter trees are hit higher by the blade in order to pull out the stumps. If this is not done during the first pass, the tractor operator has to back up, lower the blade, and make a second pass to dig out the stump. The blade has an angled-bottom cutting edge that is used to shear trees and stumps at any level. At one end of the blade, a sharpened "stinger" extends out from the bottom to split and weaken large trees.

Located across the top of the blade is a push-bar, which gives the tractor operator control over falling trees. The blade is kept in an angled position to allow windrowing in one continuous pass through the undergrowth and trees. The operator of the tractor is protected by a Fleco steel canopy and steel bars over the engine and exhaust pipe. Each blade-equipped tractor is clearing an average of 12 to 15 acres a day.

Personnel

Bill Hazelhurst is the project manager and Charles Strott, the office manager for C. J. Langenfelder & Son, Inc. B. W. Hoxie is the field engineer for the Civil Aeronautics Administration. THE END

New company produces Caterpillar attachments

John J. Ulrich and R. D. MacDonald, former director of sales and director of engineering, respectively, for Ulrich Mfg. Co., have formed a new company, John Ulrich Co., in El Paso, Ill., at the junction of U. S. 24 and U. S. 51. Initially, the firm is manufacturing newly designed base spreaders and shoulder spreaders for Caterpillar equipment, to be sold exclusively through Caterpillar dealers. In the future, other auxiliary products will be added to the Ulrich line.

Foster export service reviewed in bulletin

The Foster International Corp., an affiliate of L. B. Foster Co., Pittsburgh, Pa., has released a new bulletin announcing world-wide export service of specialized steel products. It illustrates many of the company's products, including steel-sheet and steel-pipe piling, etc.

The literature may be obtained by writing to Foster International at 11 Park Place, New York 7, N. Y.

Clement Dump-Trailers

MAIN OFFICE
Louisiana Bank Building, Shreveport, La.
PLANT: P. O. Box 807, Minden, Louisiana

WEST COAST
402 W. Foothill Blvd. Azusa, California

Distributors

ALABAMA
H. C. Blackwell, Jr.
Adamsville

CALIFORNIA
Strange Truck & Equipment Company
West Sacramento

COLORADO
Timpte Bros., Inc.
Denver

ILLINOIS
Archer Trailer and Truck Sales
Chicago

IOWA
Hawkeye Truck Equipment Company
Des Moines

KANSAS
Western Truck Equipment Company
Kansas City

LOUISIANA
Transportation Equipment Company
Baton Rouge & New Orleans

MINNESOTA
Road Machinery & Supplies of Duluth
Duluth
Road Machinery & Supplies of Minneapolis
Minneapolis

MISSISSIPPI
Robertson-Heil Company
Jackson and Meridian

NEW MEXICO
Timpte Bros., Inc.
Albuquerque

NORTH DAKOTA
Swanston Equipment Company
Fargo

OHIO
Visintine Equipment Corporation
Columbus

OKLAHOMA
Herd Equipment Company
Oklahoma City and Tulsa

OREGON
Schetky Equipment Corporation
Portland and Seattle

SOUTH CAROLINA
Carolina Equipment and Parts Company
Columbia

TENNESSEE
United Road Machinery & Supply Company
Memphis

TEXAS
Beckman Trailer Sales, Inc.
Fort Worth
I. F. Nelis Associates
Houston
Western Trailer Company
Lubbock

UTAH
Transport Equipment Center
Salt Lake City

WISCONSIN
Wisconsin Highway Trailer Sales
Green Bay

CLEMENT DUMP TRAILERS

COPIED . . .

Few products in the heavy construction industry have ever been so persistently copied as the Clement cable operated Dump Trailer.

. . . but not equalled

Many have tried, yet no one has ever been able to duplicate the roadability, speed and operating simplicity *of the original Clement design.*

Now available, from Clement in Cable lift, Hydraulic-lift, and in two new Bottom-dump models, there is an *original* Clement dump trailer exactly sized to your hauling needs.

Check on the Clement line before you order your next unit. Clement Trailers have been copied . . . but not equalled.

CLEMENT-BRASWELL, INC.
Shreveport, Louisiana
PLANT: Minden, Louisiana

Clement

Hydraulic-Lift
10 - 30 yd. cap.

Cable-Lift
10 - 30 yd. cap.

Bottom Dump
10 - 30 yd. cap.

Dual Trailer
8 - 10 yd. cap.

For more facts, use Request Card at page 18 and circle No. 207

The main factory for the production of heavy concrete building elements at the Zeran plant near Warsaw.

A view of the live end of the prestressing bed where large concrete beams are cast.

CONCRETE

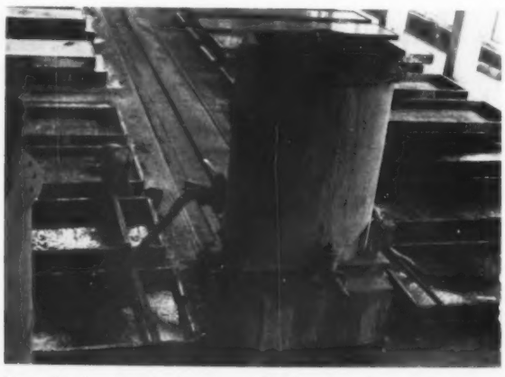
Poland's choice for reconstruction

Nation emphasizes concrete products in its rebuilding program; factories mass-produce standardized prefabricated elements

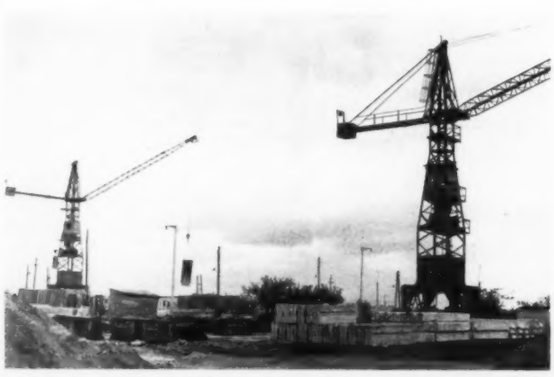
by WILLIAM H. QUIRK
editor

Dredge Smok III digs a canal under a prestressed bridge previously built flat on ground at the Zeran plant. Canal links the plant with Vistula and Bug rivers.

New machinery for turning out large precast panels is checked out in the Zeran works. The operator at right controls movements of the casting machinery, left.



From this huge tank, forms are filled with a slurry mix for the production of gas concrete.



Tall yard cranes handle the moving and loading of elements in the storage area at Zeran.

The interior of the concrete plant at Nowa Huta. This bed for the prestressing of large beams is 50 meters (164 feet) long. The long-line system is used.

Prestressed trusses 21 meters (68.9 feet) long are stockpiled in the yard at the Nowa Huta plant. Pipes projecting from the bottom chord of the truss at left will be removed, forming cavities for post-tensioning tendons.

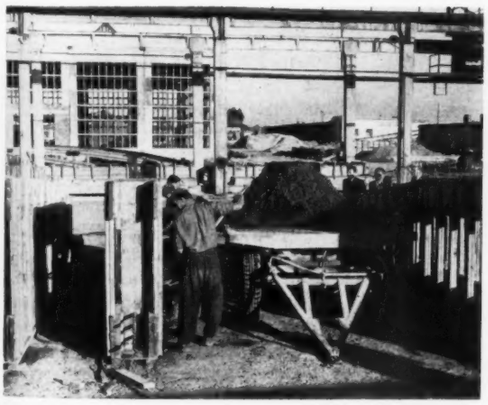
Poland, with its population increasing at one of the fastest rates in the world, is concentrating on the use of concrete as a building material to meet the demands of its reconstruction program.

At its present rate of growth, the current 28-million population is expected to reach a 38-million figure by 1965. Not only must new housing, offices, schools, stores, and hospitals be built, but new plants and factories must also be constructed to satisfy the country's growing emphasis on heavy industry as a means of turning Polish economy away from being chiefly agricultural.

Poland suffered severely during the six long years of war and occupation from 1939 to 1945. And the past 13 years of reconstruction have demanded hard work and sacrifice. The death of six million Poles during the war has made drastic inroads into the ranks of skilled workers and building-trade artisans in the 40 to 50 age group. Consequently, much of the immediate post-war emergency reconstruction left some-

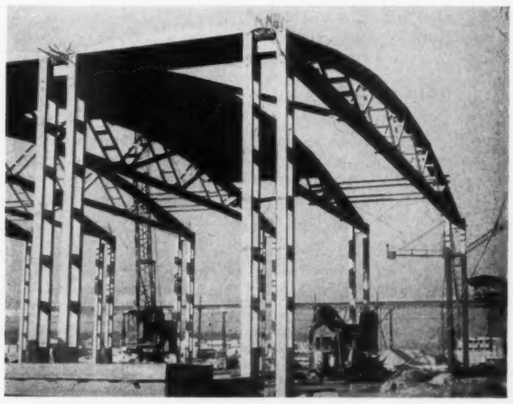
(*Continued on next page*)

In Nowa Huta, the new city serving Poland's latest steel mill, 8-story apartment houses are being built of precast-concrete elements.



Low-slump concrete is placed in forms for members making up a 24-meter (78.7-foot) truss at the Strzebnica plant.

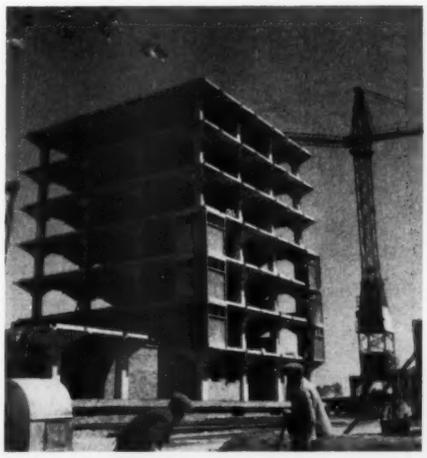
The assembled truss is being hoisted up concrete columns to its seat on top.



Trusses are now in place on top of columns and are being covered by precast roof panels.

◄ Hoisting a precast-concrete mushroom capital into position for a floor panel in an industrial building.

Here the capitals are assembled resting on the column heads; supporting floor panels are laid on the capital arms. This type of construction has proved especially economical for multistory warehouses. ►



This group of Polish engineers and administrators engaged in building design and construction includes, left to right, Jerzy Kawecki, director; Zenon Zielinski; Walery Iwanowski, director; Bohdan Kurkowski; Jozef Zielonka; Waclaw Zalewski; and Stanislaw Kus.

(*Continued from preceding page*)

thing to be desired in the finished building product. The number of experienced masonry workers was alarmingly depleted, and trade schools and apprenticeship courses could not develop enough bricklayers to meet the demand.

While there are still new brick buildings going up in Poland, this type of construction is fast giving way to the use of concrete that is chiefly produced in standardized prefabricated elements in centrally located factories. The country now has 13 plants for precasting heavily reinforced concrete building elements; five plants for the production of gas-concrete products, mainly blocks; and four other factories that turn out slabs and small-size concrete bricks. These enterprises employ about 6,000 workers, plus 1,000 more in engineering and administrative personnel. The plants produce over a million cubic meters of concrete products a year.

The structural trend in Polish industrial building is to prestressed and shell-concrete construction. In using prestressed concrete, the Poles assemble large structures from smaller elements, thus eliminating special transport arrangements. A 30-meter (98.4-foot) span truss, for instance, is made up of elements not exceeding 6 meters (19.7 feet) in length. These are hauled to the site on an ordinary truck and there assembled and post-tensioned into one integral unit.

Warsaw's plant

Poland's largest concrete-products plant is the Zeran works located on the right bank of the Vistula across the river from Warsaw. The Zeran district is a huge industrial complex on the outskirts of the capital, and includes an iron and steel works, the Ursus tractor plant, a motor-car factory producing the Warszawa automobile, and an electric heat-generating plant that supplies northern Warsaw with electric light and power, along with heat and hot running water. It is axiomatic, of course, that Warsaw should have the largest concrete plant in Poland, for it is the country's metropolis, and in proportion to its size suffered more damage during the war than any other city in Europe. In 1939, the population of Warsaw was 1,300,000. At the end of the occupation in 1945, with 87 per cent of the city's buildings completely destroyed, this number had dwindled to about 50,000. Of Warsaw's industrial plants, 90 per cent lay in ruins. Today, Warsaw's population has grown to around 1,100,000, and statisticians estimate that in 25 years it will increase to two million.

Where the devastation was complete, the old narrow street lines have been forgotten and new wide avenues laid out through the rubble. Solid blocks of new apartment and office buildings have been rebuilt on straight lines with plain fronts. Parts of the city are still in ruins, and the housing shortage remains acute. But this is gradually being overcome as new buildings are constructed of

Another Caterpillar Improvement That Lowers Maintenance Time and Costs

—NEW DRY-TYPE AIR CLEANERS FOR THE DW20 AND DW21!

The engine's worst enemy, air-borne dust really takes a licking from the new Caterpillar dry-type air cleaner, now standard equipment on DW20 and DW21 Tractors. Another of many earthmover features developed under Caterpillar leadership, this new cleaner not only slashes maintenance time and costs, but also increases engine efficiency and life. For example:

MORE EFFICIENT! New dry-type air cleaner removes 99.8% of all dirt in intake air, where oil-bath cleaners normally remove only 95 to 98%. In addition, effectiveness of the new dry-type unit is *constant* at any engine RPM, is not adversely affected by temperature changes or oil that needs changing.

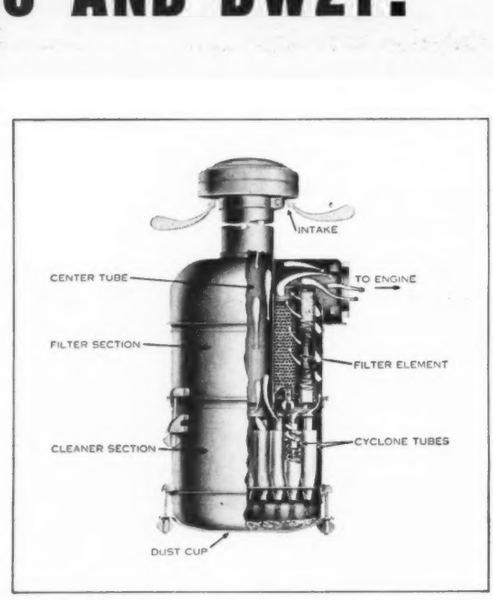
This constant efficiency means that the most serious thing that can happen is reduction of air capacity—and temporary loss of engine power. But dirt *does not* get through into the engine. Excessive black smoke is an immediate visual reminder that HP is decreasing and that the cleaner needs servicing.

EASIER TO SERVICE! Both dry-type and oil-type cleaners should be serviced at intervals depending on dust conditions. But with the dry-type all that's required is removing the pan and emptying the dry material—a matter of 5 minutes, as against 20 minutes it usually takes to service the often messy oil-type. There's 15 minutes *more* for production at each service period!

MORE ECONOMICAL! The paper filter element can be cleaned easily and reused several times making replacement costs lower than the sum normally spent for oil to service the oil-type. Servicing is also faster, reducing labor costs.

Here's proof again that Caterpillar is the leader in *lowering* earthmoving costs. For complete information on the new dry-type air cleaner in Cat DW20 and DW21 Tractors, see your Caterpillar Dealer!

FIND YOUR CATERPILLAR DEALER IN THE YELLOW PAGES



HOW THE DRY-TYPE AIR CLEANER WORKS

Operation of this moisture-proof unit is simple. Air enters it through the stack cap and passes through the center tube. The cap has a 14 x 14 mesh which removes most large, troublesome particles. From the center tube the air passes through the cyclone tubes.

These cyclone tubes swirl the air causing the heavier particles of dirt to drop out by centrifugal action through the funnel section into the dust cup. The relatively clean air then passes to the resin impregnated paper filter. This removes the remainder of the dirt. After passing through it, the air moves to the intake manifold of the engine.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

NEW DRY-TYPE AIR CLEANERS FOR GREATER EFFICIENCY AND ECONOMY!

For more facts, use Request Card at page 18 and circle No. 208

standardized prefabricated concrete elements.

The Zeran works embraces 110 hectares (273 acres) located about 15 kilometers (9 miles) from downtown Warsaw on a waterway with one branch or canal leading to the Vistula and another connected to the Bug River. In addition to the water transportation provided by the canals, the plant is served by both a rail line and highways. Before the canals were dug by hydraulic dredge, prestressed bridges were built flat on the ground across their line. Then as the dredge excavated under them, they were ready for service.

About 1,600 persons are employed at this plant, which includes an administrative building and five apartment houses for workers who live at the site; a factory for heavy elements, such as large panels and beams; two buildings for the manufacture of lighter elements such as window frames, stairways, and floor planks; a block factory; gas-concrete building; laboratory; small power station; two buildings for the production of railway sleepers; workshop; and transport building.

Gas concrete

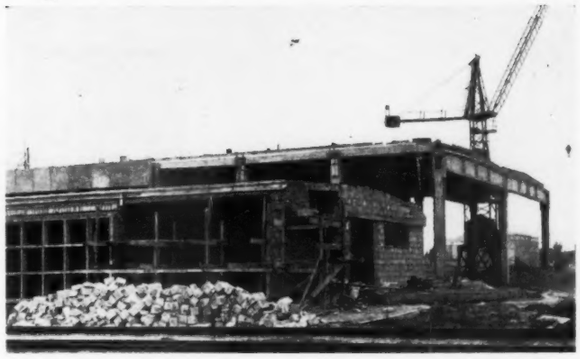
Poland has made significant strides in the production and use of gas concrete. Besides the gas-concrete factory at Zeran, there are four others in production throughout Poland and six more now under construction. Total production of these five working plants is expected to hit 400,000 cubic meters for 1958. The factories are located near power plants in order to make use of the latters' by-product—fly ash. Warsaw's main power plant turns out 400 tons of fly ash daily.

Gas concrete at Zeran is produced with slurries of either sand and cement or fly ash and cement in various proportions, with aluminum powder, imported from Austria, added to each. The central mixer at one end of the factory discharges into a large vertical cylindrical tank that rolls on tracks down the middle of the floor. Bottom spouts at opposite points of the tank discharge the mix into flat rectangular vats which are externally heated. This causes the material to rise, hence the name—gas concrete.

From two to four hours after the mix has been poured into the molds, the forms are removed and the big slab is cut up into blocks of the size desired. Cutting is done mechanically with wire knives. The popular block size in Poland is 24×24×49 centimeters (about 9½×9½×19 inches). The blocks are then wheeled into autoclaves, of which the Zeran factory has ten, for steam curing under pressure. The blocks develop strengths up to 100 kilograms/square centimeter, which is well in excess of the strength required in housing construction, i.e. 40 kilograms/square centimeter.

These blocks are not reinforced, but tests are now under way to re-

(Concluded on next page)



The Zeran works is continually being enlarged. Here a 3-bay addition is being erected for one of the buildings. The new elements going up are of prestressed, precast concrete.

DIAMOND "FIRSTS"

in the development of Roller Chain

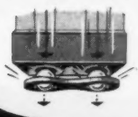
FIRST TO PRE-LOAD PRODUCTION ROLLER CHAIN

Pre-loading seats pins, bushings and linkplates; takes out initial stretch.

FIRST TO STUDY FATIGUE

First to make design changes in roller chain parts for improved fatigue resistance.

FIRST TO BALL DRIFT



Pitch holes in DIAMOND chain sideplates are ball drifted for greater fatigue resistance—(DIAMOND patent).

FIRST TO EMPLOY SEAM RELIEF BUSHINGS

Seam relief bushings in roller chain reduce run-in time and provide better lubrication—(DIAMOND original patent).

FIRST TO PROPERLY PLACE BUSHINGS

Bushing seams on DIAMOND roller chain are always placed *away* from load-bearing area for improved resistance to wear and fatigue.

FIRST TO SHOT PEEN

DIAMOND chain parts . . . rollers, bushings, linkplates and pins . . . are shot peened for greater fatigue resistance.

DIAMOND Roller Chains are the product of more than sixty-eight years of specialization in the manufacture of high endurance roller chain. Some of the quality features developed and pioneered by DIAMOND are considered "extra" or "premium" features in other chains. These are standard in DIAMOND Roller Chains . . . and have been for years. DIAMOND will continue to improve the capabilities of its product, assuring you *always* of a thoroughly dependable chain with superior operating characteristics.

Look for the ◇ on the Links

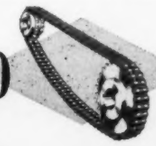
DIAMOND Distributors have all types and sizes of Roller Chain *in stock*, ready for instant delivery. Look under "Chains, Roller" in the Yellow Pages of your Telephone Directory . . . or write to factory for catalog and name of your nearest distributor.

DIAMOND CHAIN COMPANY, INC.

A Subsidiary of American Steel Foundries

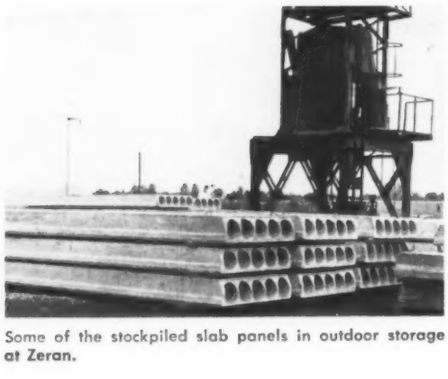
Dept. 487, 402 Kentucky Avenue, Indianapolis 7, Indiana

Offices and Distributors in All Principal Cities

DIAMOND  **ROLLER CHAINS**

For more facts, use Request Card at page 18 and circle No. 209

(Continued from preceding page)



Some of the stockpiled slab panels in outdoor storage at Zeran.

inforce the blocks with wire fabric to increase their strength, and technicians are experimenting with various covering materials to coat the reinforcing as protection against corrosion. Other tests are being conducted to give the blocks various colors. The Poles are so optimistic over the future importance and use of lightweight and gas concrete that they are building no more brick plants. A wall of gas-concrete blocks is about one-quarter the weight of a brick wall that provides the same degree of insulation. And, of course, the lighter-weight materials are more economical to erect. At present, the four to six-story building is the cheapest to construct, but with the increasing use of lightweight blocks and panels, Polish engineers are talking about 12 to 15-story apartment houses, and a few are even mentioning 30-story buildings of such materials.

The success of the Poles with gas concrete has not gone unnoticed in eastern Europe. Czechoslovakia and Yugoslavia have each ordered a gas-concrete plant from Poland, complete with machinery, while the Soviet Union has ordered ten.

Precast panels

The trade in building-materials machinery works both ways, and Poland has recently acquired from Russia two automatic casting beds for the production of large concrete panels. The two machines are set up opposite each other in a bay of the heavy-elements factory. A man at a console in the center of the bay manipulates buttons and levers that operate the precasting equipment. Concrete is fed to the bed from an overhead hopper bin, while five vibratory tubes are pushed through the mix for the complete length of the panel. Before the concrete sets the tubes are withdrawn, leaving voids that are part of the panel design.

The big building panels are 6 meters (19.7 feet) long, either 1.6 or 1.2 meters (5.2 or 3.9 feet) wide, and .24 meters (9 inches) thick. The five round longitudinal voids have .18-meter (7-inch) diameters. The machines are rated at three panels per hour. These precast panels are neither reinforced nor prestressed.

Beams and girders, together with truss members of various sizes, are prestressed in a large hall by the long-line pretensioning method. The lengths of these elements are determined with a 3-meter (9.8-foot) modulus in mind, for typical construction calls for 6 meters between building columns. This 3-meter standard permits greater economy, plus speedier fabrication.

The average length of beams and girders ranges from 15 to 24 meters, increasing by the 3-meter modulus increments. From 12 to 18 thin-strand wires (5-millimeter-diameter) are employed in the prestressing. For one ton of girder, 45 kilograms (99 pounds) of steel are used. For one square meter of corrugated shell roof, an average of 12 kilograms (26 pounds) is required. The plant produces every precast structural member for a building except columns which are too heavy to transport. Columns are usually prefabricated at the site, then erected in place.

Railway sleepers

In the two buildings at the Zeran plant for the production of railroad ties or sleepers, 50-meter (164-foot) beds permit the casting of over 100 prestressed sleepers at a time—five abreast for the full length. Continuous pretensioning is followed, and the wires are cut between sleepers when the concrete reaches the required strength.

Poland is short in steel supply, and

Two typical weld samples using Stoody Iron Powder Build-Up. At left is a stringer bead showing high build-up with a single pass. At right is a two pass weaving bead. Etched and polished ends show depth of penetration. Compare these results with your present build-up material.

Try New Stoody Iron Powder Build-Up

...then compare the build-up height!

You can rebuild worn equipment faster and get sounder, tougher deposits with STOODY IRON POWDER BUILD-UP!

This new build-up electrode is a "natural" for use on parts made of carbon and low alloy steels. Deposits are tough, rigid, resistant to mushrooming and cold flow.

Most important, *hardness of deposits is not dependent on carbon, but is the result of STOODY BUILD-UP'S balanced alloy content!* This means greater uniformity and overall dependability of deposits—regardless of variations in base metal analysis.

Try IRON POWDER BUILD-UP today! Available from your Stoody Dealer (Check the Yellow Pages of your phone book) or write direct.

HOW STOODY IRON POWDER BUILD-UP SOLVES TODAY'S BUILD-UP NEEDS:

1. Makes high deposits in a single pass.
2. Lays down more pounds per hour at a lower cost per pound.
3. Deposits are tough and rigid, resistant to cold flow and deformation.
4. Provides strong support for overlays.
5. Won't spall, work-harden or crack.
6. Deposits will not exceed 45 Rc in hardness even when quenched.
7. Deposits are machinable.
8. Excellent weldability with minimum spatter and smoke.

STOODY COMPANY

11904 East Slauson Avenue • Whittier, California

For more facts, use Request Card at page 18 and circle No. 210

this accounts for the increasing popularity of prestressed concrete, which requires a minimum of steel. Wire and strands for prestressing come from mills in the south. Cement is in good supply. Coarse aggregate used at Zeran is mostly a basalt crushed stone, while the fine aggregate is either pit or river sand. Mixing is done in pan, counter-type machines.

The general manager of the Zeran concrete works is Kasimierz Nowakowski, with Jerzy Szymanski president of the workers council.

One of the largest sources of aggregate for construction in Poland is the Zagnansk quarry near Kielce, 175 kilometers (105 miles) south of Warsaw. Here is a vast deposit of hard, dense sandstone with a compressive strength of from 2,000 to 3,000 kilograms/square centimeter. Quarrying is done on three benches, with Ingersoll-Rand wagon drills sinking the blast holes. Broken rock

In producing aggregate for Polish construction, the Zagnansk quarry near Kielce employs many married couples. Their pre-school children are cared for during the day in a nursery. These little ones are just settling down for an afternoon nap.

is loaded into narrow-gage dump cars for hauling to the crushing plant, which includes two German-make and one Polish-make jaw and roll crusher, and a Symons cone crusher. The plant turns out 420,000 tons of aggregate a year for use both in plants and for highway work. Shipping is handled by trucks for short hauls, and by rail for long hauls. Marian Lenartowicz is director of the quarry, with Wladimier Szcmraj, chief of plant. The quarry employs 800 workers, both men and women.

Nowa Huta plant

Krakow in southern Poland is the country's fourth largest city, and was the ancient capital of the medieval Polish kings. It is a center of culture, education, and art, and fortunately escaped destruction during the war when the flow of battle bypassed Krakow to the north and south. A few years after the war the government decided to build a new steel plant—Nowa Huta, in Polish—on the eastern outskirts of Krakow, along the banks of the Vistula. The site is flat, and was given over to cauliflower patches, strawberry beds, and fruit orchards. But before the steel plant could go up, a new concrete-products plant had to be constructed to provide building elements for the mills and for a new city to house the steel workers.

(Continued on page 19)

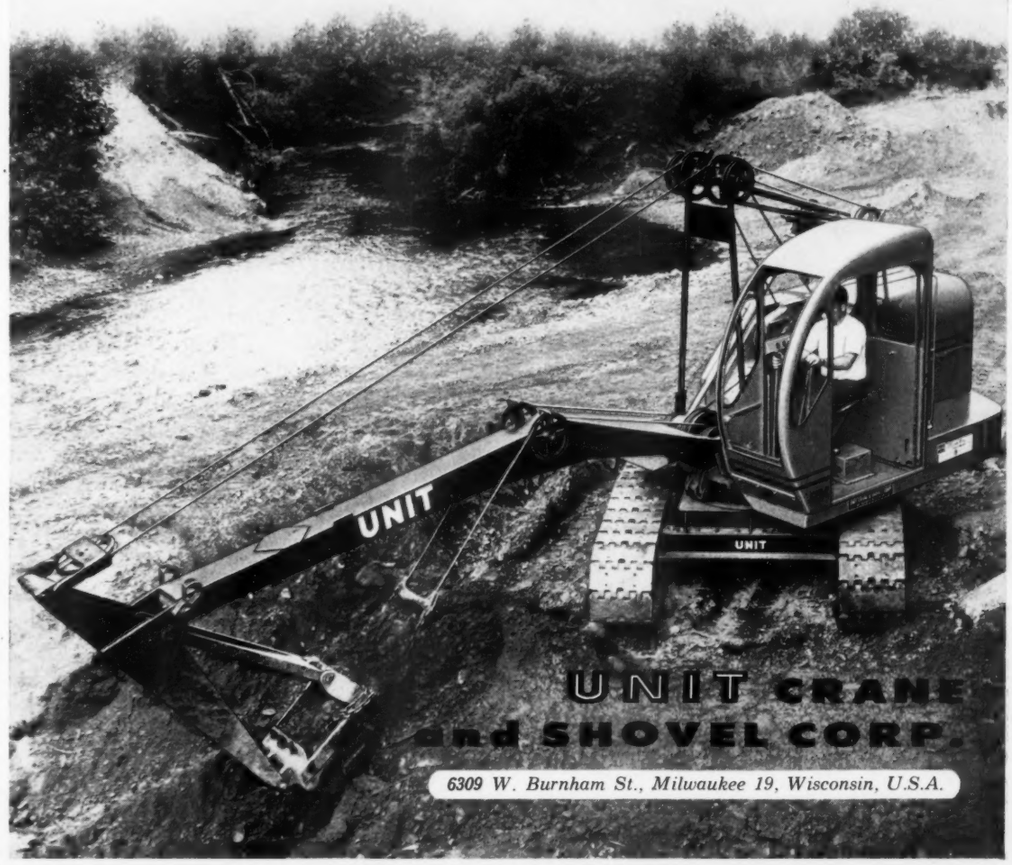
Jozef Gumienny (right), general manager of the concrete plant at Krakow, discusses casting techniques with Dr. Henri Lesniok (left), secretary-general of NOT, Poland's engineering society, and Bohdan Kurkowski (center), design engineer, against a background of bases for light poles in the plant's storage yard.

UNIT CRANE & SHOVEL CORP. UNIT MILWAUKEE WISCONSIN

simple controls

for Easy Operation!

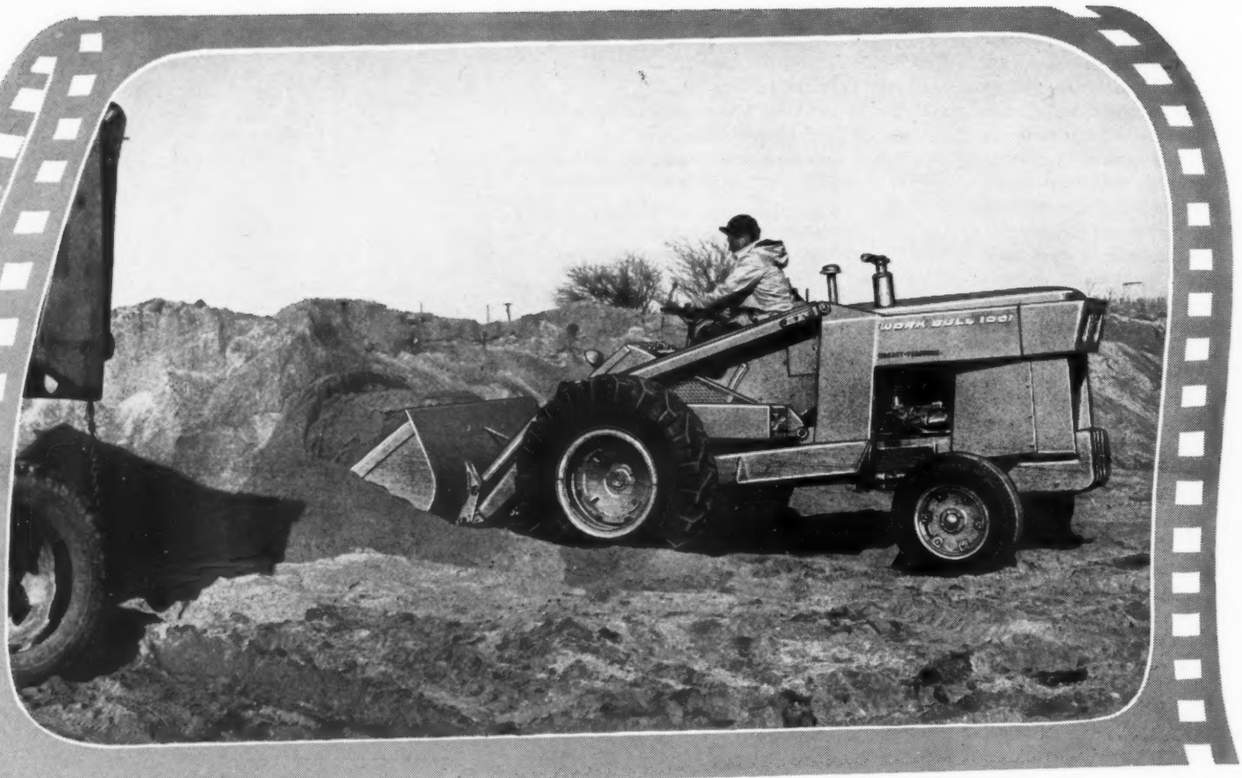
The job of laying underground water conduit on a western earth moving project was quickly and easily performed with this UNIT Challenger 513C Trenchoe . . . *in spite of an inexperienced operator.* Previously, he had only handled a tractor-mounted back hoe, but with the handling ease of UNIT, he became a proficient operator in a very short time. The FULL VISION CAB, hydraulic actuated clutches, finger tip controls and other exclusive UNIT features enabled him to handle the job with speed and safety. Get all the facts. Write today for literature.



UNIT CRANE and SHOVEL CORP.

6309 W. Burnham St., Milwaukee 19, Wisconsin, U.S.A.

For more facts, use Request Card at page 18 and circle No. 211

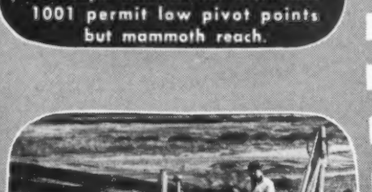


Stretch Dollars – Save Manpower with equipment that does more . . .

WORK BULL 1001

WITH INSTANT REVERSING, 60.3 H. P. AND 43° ROLLBACK WORKS CIRCLES AROUND OTHER MACHINES

Telescopic arms on the Work Bull 1001 permit low pivot points but mammoth reach.



The Work Bull 303 with 500 Loader is also a highly maneuverable power-matched shovel loader.

The Work Bull Fork Lift has 10 easily changed attachments. Block tines have side shift feature.

GREATER SPEED AND MANEUVERABILITY In stockpiling, loading, and stripping operations that call for speed, the Work Bull 1001 has no equal. Instant reversing without shifting – by simply changing your foot from the forward acceleration pedal to the reverse pedal – lets you get in and out faster. Direct line thrust gives you "bull-dozer" action, and 43° rollback at ground level provides more breakaway, and allows you to get heaping loads. Special shock load absorber reduces spillage and alleviates damage to the hydraulics in rough terrain.

Consider all these, plus 60.3 h. p., power steering, torque converter, five-speed transmission, and left and right turning brakes. You can see why it will out-cycle machines with more capacity.

CONVERTS INTO EIGHT DIFFERENT MACHINES The Work Bull 1001 is easily changed from a 7/8 cubic yard Loader to a Backhoe (with its own backfill blade) . . . to a Fork Lift . . . Pick-up Sweeper . . . Crane . . . Angle Dozer . . . Rotary Broom . . . and back to a Loader and Scarifier right in the field. Each performs so efficiently you will think it is intended for just that one purpose.

LOW PACKAGE PRICE The Work Bull 1001 is priced less than anything in its class. In fact, chances are the complete basic unit and **all** attachments will cost you less than you normally pay for one single-purpose machine.

OTHER POWER MATCHED MASSEY-FERGUSON EQUIPMENT include the Work Bull 202 (40 h. p.) with integrated Davis Loader-Backhoe, Work Bull 303 (54.5 h. p.) with 500 Loader and Backhoe, Work Bull Fork Lift, plus a multitude of integrated attachments for each.

For information on the complete Massey-Ferguson line ask for Brochure G-4. For specific information on the Work Bull 1001 ask for Brochure W-1. *Write Massey-Ferguson Industrial Division, 1009 South West Street, Wichita 13N, Kansas.*

MASSEY-FERGUSON
INDUSTRIAL DIVISION

(*Continued from page 17*)

A 70-hectare (173-acre) site was chosen for the concrete plant, only 10 kilometers (6 miles) east of Krakow, and 9 kilometers from the steel works. Construction started in 1949, and the following year work on the steel mills got under way. Progress on both plants was rapid, and the steel works now has three blast furnaces in operation, with three more in the planning stage. Seven open-hearth furnaces are in service, together with a blooming mill, resulting in an annual steel production of 1,500,000 tons. The target goal for the Nowa Huta works is 3,300,000 tons annually, when additional furnaces and rolling mills are completed and in operation. This figure is expected to be reached within the next decade, making the Nowa Huta production equal to the combined output of the 20 or so other steel plants in Poland. Coal and limestone are in good domestic supply, but iron ore must be imported, mostly from the Soviet Union. Brazil, China, Korea, and Sweden are other supply sources of ore.

Nowa Huta steel works now employs a force of some 16,000, which will increase as the mills are enlarged. There was no available housing for these workers and their families in Krakow (population 328,000), and so an entirely new city—Nowa Huta—was built only 1½ miles from the sprawling steel complex. City planners had a field day, starting from scratch in virgin territory. With the layout of Paris in mind, they placed their wide avenues radiating out from central parks and plazas, and along these streets are the workers' apartment houses, schools, shopping centers and commercial service areas. All this work is still in progress and the housing shortage remains acute, but when construction is completed, the city of Nowa Huta will have facilities to provide for a population of 100,000.

Concrete production

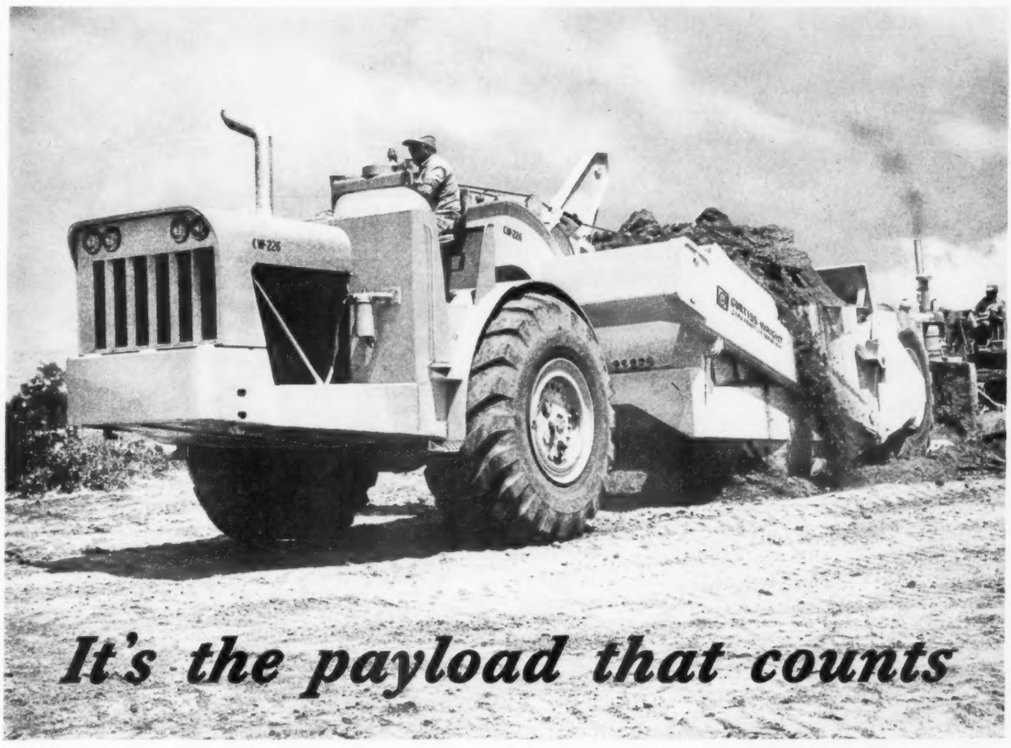
The concrete plant supplying the products for the new mills and city has an impressive layout with a main building 200×70 meters (656×230 feet). It has its own railroad station, administration building, laboratory, block factory, workshop, and seven apartment houses to accommodate some of the 1,100 workers employed there under the direction of general manager Jozef Gumienny. Raw supplies for use at the plant include: cement from nearby Silesia; sand from the Vistula River; coarse stone aggregate from Nowy Targ in the southern mountains; steel and slag from the Nowa Huta mills. The slag is used, along with cement and sand, to produce concrete blocks at the rate of 250,000 per month.

The main building turns out a variety of products including prestressed railway sleepers, prestressed beams and tee-sections, panels, concrete segments for coal mine shafts, reinforced-concrete pipe from 30 to 120 centimeters in diameter (12 to 47 inches), and reinforced-concrete light poles. The prestressed elements are cast on a 50-meter (164-foot) bed, which will be lengthened in the future to 80 and 100 meters. Trusses that are 21 or 24 meters long are cast as one unit and post-tensioned after the Freyssinet system. The stressing tendons are put through voids made in the concrete by embedding pipes, coated with oil, in the pour. The pipes are pulled out a couple of hours after the cast. Trusses over 24 meters in length, running up to 54 meters, are cast in sections that are later assembled and post-tensioned at the site.

Mine shaft segments are heavily reinforced to impart a strength of

(*Continued on next page*)

Because of the numerous coal fields in nearby Upper Silesia, men workers for the concrete plant located at Strzebnica are difficult to obtain. This one lucky fellow shifts forms with the help of three pretty Polish blondes who feel that physical work is good for the figure.



...New Curtiss-Wright Scraper Delivers 20% More than Rated Capacity!

. . . The chart at right tells the story . . . Under difficult on-the-job conditions this Curtiss-Wright CW-226 *averaged* more than 5 yds. better than rated capacity . . . moved this load at money-making speed — dumped swiftly and evenly . . . This type of job-proven performance keeps cost-per-yard figures *down* — profit figures up! . . . Every piece of Curtiss-Wright construction machinery is built to *earn* its price many times over — see your distributor today for complete information on the CW-226 and the many other units in the Curtiss-Wright line!

THIS ON-THE-JOB PERFORMANCE REPORT TELLS THE STORY

MODEL CW-226

2-axle, self-propelled scraper designed for rated capacities of:

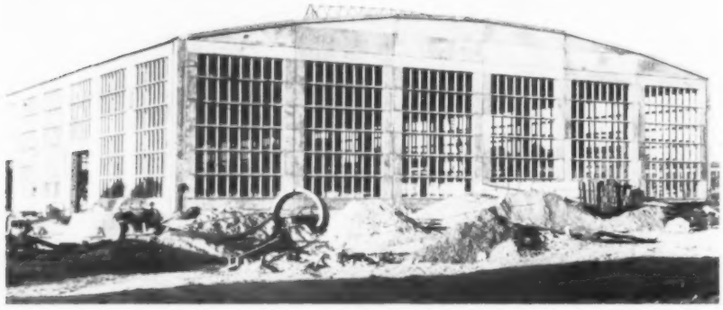
26.0 Cu. Yds. Struck
36.0 Cu. Yds. Heaped

Average Payload Hauled:	31.2 Cu. Yds.
Loaded Unit Speeds to:	38. m.p.h.
Average Loading Time: (with single pusher, less than top h.p. rating)	1 min., 30 sec.
(with tandem pusher)	50 sec.
Average Loads:	85,800 lbs.

SOUTH BEND DIVISION
CURTISS-WRIGHT
CORPORATION
SOUTH BEND, INDIANA

For more facts, use Request Card at page 18 and circle No. 213

(*Continued from preceding page*)



The main building of precast concrete at the Strzebnica plant in southern Poland.

400 kilograms/square centimeter to the completed circle, which is made up of 11 segments for a 6-meter (20-foot) diameter. Segments are cast to a 1-millimeter tolerance, since they must fit snugly when bolted together. Light poles are cast in reinforced concrete, and are turned out at the rate of about 30,000 a year. With a shortage of wood, the Poles wish to increase this production to around 100,000 a year and are experimenting with designs in prestressed concrete.

Aggregate is brought into the plant on a conveyor system to a central mixing area. Four Swedish-make 1-cubic-meter mixers turn out a low-slump concrete for all products.

Strzebnica plant

The Poles have located their concrete-products plants where the demands for these building elements are greatest. The Strzebnica plant, near Tarnowskie Gory, helps to satisfy this demand for the industrial area around Katowice, in the Upper Silesia section of Poland. This is the heart of the coal-mining, chemical, and the older steel industries. About 600 are employed at Strzebnica, 40 per cent of them women. Since the coal mines absorb most of the male workers in these parts, women work at the concrete plant in many capacities, including those of concrete technician, laboratory assistant, or concrete worker. Their slender build belies their muscular ability.

The main production building, 100×36 meters (328×118 feet), is built entirely of precast or prestressed elements. Columns were erected in place, and trusses were assembled and post-tensioned on the ground between the columns. Special steel heads were placed over the tops of the columns for lifting the trusses into place between each pair of uprights. No crane was required for truss erection. Clearance from floor to bottom of truss is 10 meters (32.8 feet), and the working area is serviced by four overhead cranes. The roof consists of precast panels 6 meters long × 1.4 meters wide × 3 centimeters thick (19.7 feet × 4.6 feet × 1 3/16 inches).

A large variety of concrete products is turned out at Strzebnica, both within the main factory and in the adjoining yard. The large truss elements are cast outside in favorable weather. Aleksander Mastowski is general manager of the plant.

A basic structural trend in Polish industrial buildings is toward roofs of reinforced-concrete shell panels, both anticlastic and synclastic designs. They contain little reinforcing, are from 3 to 7 centimeters thick (about 1 3/16 to 2¾ inches), and may be economically cast in a variety of shapes. They are usually cast at the site in stacks, with the use of concrete molds. Emulsified clay is employed as a separating material between panels. These panels for the roof are assembled on light, movable scaffolding by a small crane.

"102 fpm laydown speed maintained for two days of continuous operation"
(California)
"The only paver made that could handle our job"
(Michigan)
"Mat is the finest we've ever seen"
(California)
"Laid 2225 tons in one 10-hour day"
(Texas)
Cedarapids
Built by IOWA

These typical comments tell you why contractors prefer

CEDARAPIDS BITUMINOUS PAVERS

It's what *paver owners* . . . not manufacturers . . . say about their machines that concerns you!

When an experienced contractor tells you he has operated every make on the market, and explains why the Cedarapids Paver was the only one that could handle his job of paving over expansion joints without excessive hand work, *you* can be sure of handling the toughest jobs successfully.

When an enthusiastic operator shows you how the Cedarapids Paver can roll along at 102 ft. per minute laying a high density mat without tears, voids, or segregation, *you* know that faster completion of the job permits a lower bid.

When State Highway Inspectors say, "At this high speed, it lays the finest mat we've seen," you're *sure* of acceptable work on every job.

When a paving contractor tells you his Cedarapids Paver handles the full output of the biggest mixing plant without extending itself to its greatest capacity potential, you know that's profitable production.

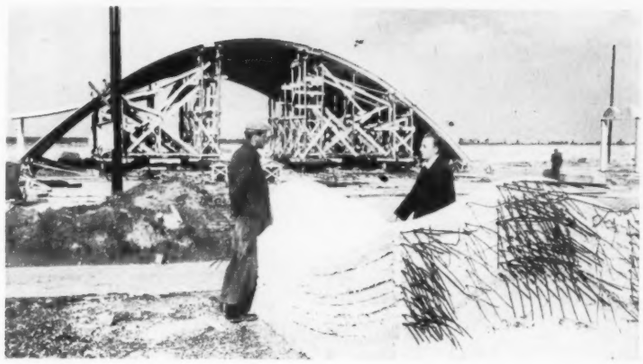
Don't take *our* word about Cedarapids superiority in paver design, construction and performance! Cedarapids Pavers are operating in practically every State . . . there's sure to be one working near you, so take time to go see it . . . get the facts from contractors who *demand the best* in equipment, *and get it* in Cedarapids Bituminous Pavers.

Cedarapids
Built by IOWA

IOWA MANUFACTURING COMPANY | Cedar Rapids, Iowa, U.S.A.

For more facts, use Request Card at page 18 and circle No. 214

Girl concrete technician, Teresa Grochla, takes concrete from the form in preparing a concrete test cylinder. Six cylinders are tested from this one truss member.



Foreground shows a stockpile of precast synclastic shell panels for the hall at rear. The roof members are assembled on movable scaffolding. Reinforcing bars are welded together and the joints poured with concrete.

Another building development that Poland has used to good advantage is the precast mushroom column cap for multistory industrial structures. The cap is cast in the shape of a square mushroom with an arm extending from each of the four corners. The opening at the middle is for seating on top of the column, which also has a square capital, and thus aids in the distribution of loads. Floor panels are laid on the arms and connected by welding. Precast intermediate plates close in the structure between columns, and also serve as lateral bracing. As each story goes up the joints are grouted.

All elements for these precast mushroom floor systems are precast at the site in concrete molds. Assembly and erection are handled by a 45-ton tower crane. Economy is achieved through the ease of prefabricating standardized elements; elimination of shoring, scaffolding and forms; speed of erection; and a minimum labor force.

THE END

Illinois University appoints Dr. Herrin

Dr. Moreland Herrin has been appointed associate professor of civil engineering by the Department of Civil Engineering, University of Illinois, Urbana, Ill. Dr. Herrin will be responsible for the teaching and research program relating to bituminous materials, mixes, and pavements.

Dr. Herrin, who has been on the faculty of Purdue University and Oklahoma State University, has also had professional experience as a design engineer of bridge structures and highways. He has been a materials engineer on the Illinois Toll Road, and was materials engineer in charge of the laboratory on the AASHO Road Test at Ottawa, Ill., last summer.

Kelly & Gruzen relocates

Kelly & Gruzen, architectural and engineering firm, has moved its New York City office to new and expanded quarters at 10 Columbus Circle. The firm, formerly located at 80 Fifth Ave., marked its 30th anniversary with the move.

For more facts, use coupon or circle No. 215→

LIFT PROFITS

with this New

WHITEMAN FORK LIFT POWER BUGGY®

Bricks, blocks, mortar and many other building materials can be handled faster, easier, more efficiently and economically with the new Whiteman Fork Lift Power Buggy. This eager beaver picks up palletized loads, scoots along narrow runways at a good clip, lifts them as high as 7' 10". Turns in a 45" radius. Powered by a 6.8 hp Wisconsin engine. Has automatic clutch, forward and reverse gears. Rugged stamina assures dependable performance for which all Whiteman Power Buggies are noted. Call your dealer or send coupon for details now.

CAPACITY UP TO 1000 LBS.

A Whiteman Power Buggy for Every Job

PALLET LIFT
For hauling palletized mortar, blocks, bricks, bags, etc. where high lift is not required. Saves labor and countless man hours.

DUMP BUCKET
Fastest, easiest, cheapest way to place concrete. Hauls 13 cu. ft. up to 16mph. Turns on a dime. Climbs 20° grades. Tireless.

WALK OR RIDE
Saves time & labor placing concrete. Forward, reverse. Only 31" wide (with single wheels). 10cu. ft. Light, compact, maneuverable.

FLAT BED
Ideal for materials, forms, lumber, etc. Five models, including type interchangeable with bucket body and Walk-or-Ride.

Whiteman

THE LEADER IN CONCRETE EQUIPMENT

13020 Pierce St., Pacoima, California Dept. C

Please send prices, catalogs and name of distributor f

☐ Power Buggy
☐ Screeding Machines
☐ Floating-Finishing Machines
☐ Vibrators
☐ Truck Mixers

Name _____
Firm _____
Address _____
City _____ Zone ____ State _____

County engineers meet

Addressing one of the briefing sessions is William C. Cude of the Engineer Research and Development Laboratories, Fort Belvoir, Va. Other members of the panel include, from left to right, Lenore Traver, N. Y. Dept. of Public Works; H. A. Radzikowski, U. S. Bureau of Public Roads; and John N. Robertson, director of highways, District of Columbia.

Over 1,200 delegates to the sixth annual National Highway Conference —co-sponsored by the County and Local Roads Division of the American Road Builders' Association and the New York State County Highway Superintendents Association—heard representatives from every segment of the road-building industry report on new developments which could help county officials with secondary road programs. The meeting was held at the Concord Hotel, Kiamesha Lake, N. Y., from September 29 through October 1.

Topics discussed, which aroused interest among the delegates, included the use of electronic devices combined with photogrammetry to produce desired road alignments and plans; small bridge standardizations; mobile testing equipment; and equipment trends.

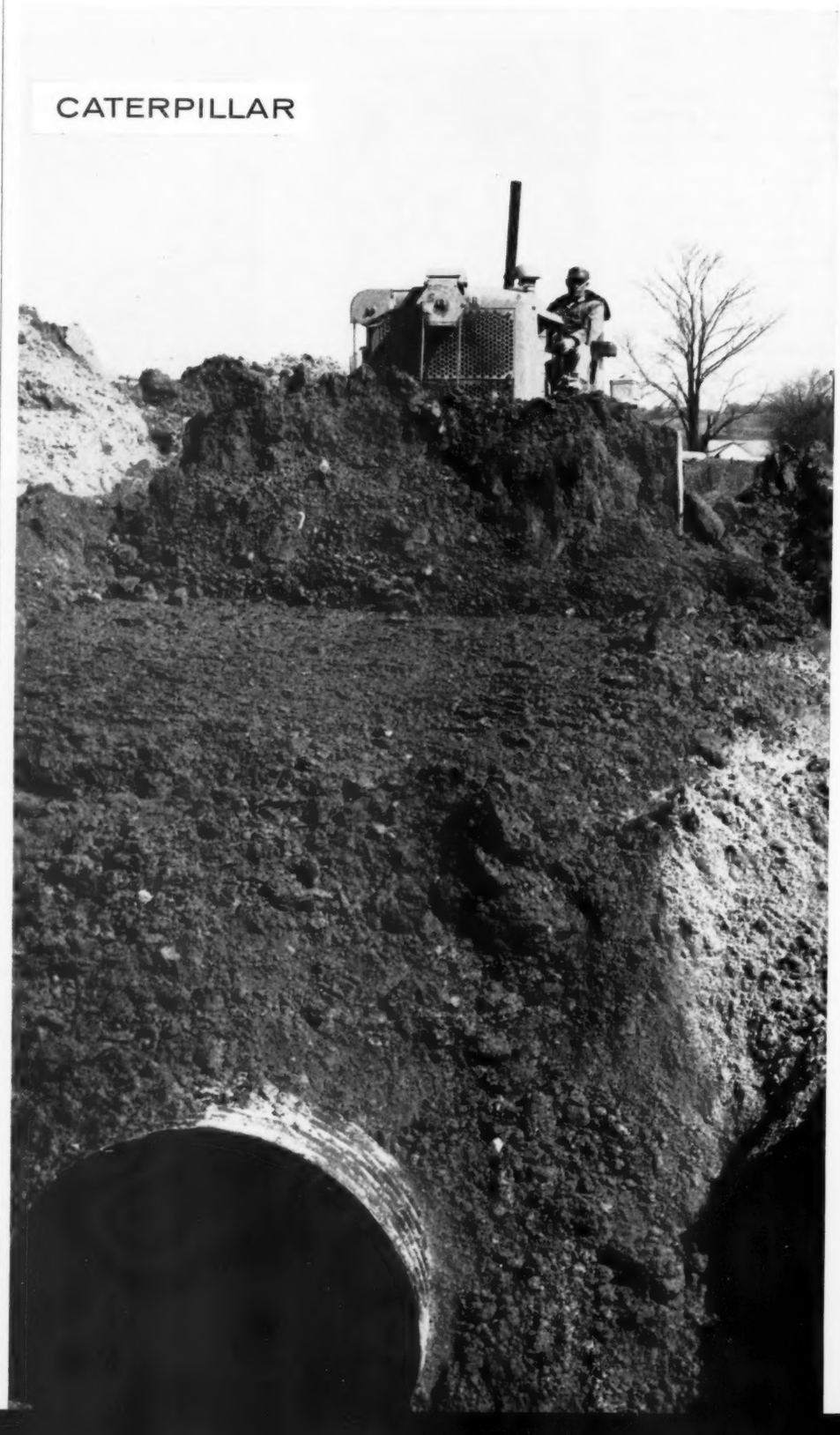
Repeat briefing session

In order for all to attend the various meetings, three identical briefing sessions were held—one on each day of the conference—on the use of electronic and photogrammetric equipment. The chairman of these sessions was H. A. Radzikowski, chief, division of development, U. S. Bureau of Public Roads. Topics discussed included the use of electronics to control urban traffic flow by setting traffic signals from a central control point. This system is now being installed in our nation's capital; and the program is available to any of the 3,000 counties in the United States. Some of the details of the system, as well as its development, were described by John N. Robertson, director of highways, Washington, D. C., and the chairman, committee on electronics, of the ARBA.

Other speakers at the briefing session discussed the advantages of photogrammetric techniques, which can be used from preliminary route location to final pay estimates on road projects. The cost alone of picking highway alignments is reduced 90 per cent through photogrammetric methods as compared to the manual ground-survey techniques. This was outlined by William C. Cude, chief, Topographic Engineering Department, Engineer Research and Development Laboratories, Fort Belvoir, Va., and chairman, committee on photogrammetry, ARBA.

The use of air-photo interpretation in highway engineering, to determine existing subsurface geological conditions, was also aired at the briefing session. This involves techniques

CATERPILLAR



eetalk productivity

Sixth annual conference highlights use of electronic computers and photogrammetry

to discover existing aggregate deposits through the use of aerial photographs, which can be used on road projects. By studying geological characteristics of the earth's surface, as seen in the photographs, the existing soil pattern in an area can be determined by comparing the surface shapes and textures with areas of known soil characteristics.

This technique is helpful in reducing the number of subsurface test bores of a proposed roadway alignment. If an area is inaccessible, for instance, a similar accessible area could be located by air photos, which would permit test boring with similar results. Spacings between test bores could be increased if the alignment passes through an area of little variation in geological make-up.

Other briefing speakers

Other speakers completing the briefing sessions discussed various topics such as the use of photogrammetry and electronic computers for new highway location and design methods; introduction to electronic computation; and the use of computers in the design of highways, structures, and composite beams. Further presentations included the use of computers in accounting, cost analysis, and traffic analysis. L. R. Shureman, chief of the electronics branch, division of development, U. S. Bureau of Public Roads, told the delegates that many computer programs, designed to handle various computations, are being stocked at the bureau's headquarters and are available to any of the state or county highway departments.

The briefing sessions included actual demonstrations of the solution of typical highway problems on electronic computers; the transmission of data to and the return transmission of answers from remote computation centers by teletype; the obtaining of aerial photographs; the use of aerial photography and photogrammetry; and other new electronic devices used to improve the accuracy and reduce the cost of aerial photography and photogrammetry.

A Cessna 180 airplane, owned by the Abrams Aerial Survey Corp., Lansing, Mich., was available for inspection at the local airport. It was equipped with cameras used to take aerial photographs, and its operation was detailed by Ralph Kauffman, president of Abrams Aerial.

The delegates heard, during the last session, representatives from Allis-Chalmers, Harnischfeger, Hetherington & Berner, Caterpillar Tractor, and Bros discuss the forthcoming developments planned for the different types of road-building equipment. This included excavation, compaction, stabilization, surface, and highway equipment operations.

Officers

Lewis A. Lush is the president of the County and Local Roads Division of the ARBA. Julien R. Steelman is the president, and Gen. Louis W. Prentiss, the executive vice president, of the association. John J. Coffey is the president of the New York State County Highway Superintendents Association.

THE END

INTERSTATE HIGHWAY SYSTEM

REPORT FROM OHIO:

Contractor tools up with Caterpillar equipment for his biggest job

Wilson H. Rownd, Vice President of General Asphalt: "Our Caterpillar equipment has always done its job without our babying it. Those DW21-No. 470s are fast loading and big producers. We've had very little down time. Our operators prefer Caterpillar — and so do we."

"What equipment do I need to do this job profitably?" That's the first question a contractor asks when he gets a large contract. And Caterpillar provides the answer to most successful contractors. Here's what happened recently on a highway project in Ohio.

Relocation of 5.632 miles of U.S. 62 between Millersburg and Berlin was awarded to the General Asphalt Paving Co. of Canton for a low bid of $1,091,095.04—the largest earthmoving contract in the firm's 38-year history. It involves moving 511,000 cu. yd. of earth, clay and shale.

To beef up its fleet, General Asphalt purchased three Caterpillar DW21 wheel-type Tractors with No. 470 LOWBOWL Scrapers, and a Cat D9 track-type Tractor with No. 9S Bulldozer and No. 9 Ripper. Other Caterpillar equipment on the job includes four D8s, a D2 and a No. 6 Shovel.

This project is part of the ABC System of roads that supplements the planned 41,000-mile National System of Interstate and Defense Highways. As work gets under way on this greatest construction job in history, more and more contractors are standardizing on Caterpillar equipment. A recent survey of the $415 million Illinois Toll Highway showed that 53 per cent of the equipment at work was Caterpillar.

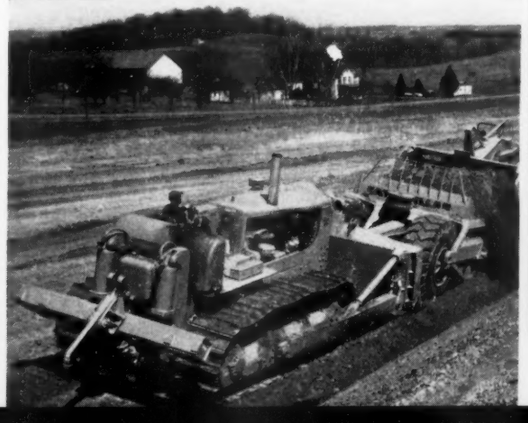
These contractors have found that for profitable production you can't beat the combination of good machines and good dealer service. Your Caterpillar Dealer can help you to a profitable low bid by showing you how to figure on the high productivity of the big, yellow machines. Ask him today to demonstrate on *your* job. It's the best way to make sure you get your share of highway work.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Cat D8 Tractor, left, bulldozes on highway relocation project. Below, a DW21-No. 470 unloads behind a D8 pulling a sheepsfoot roller. Scraper cycle is 4,800 ft.

Three other D8s and a D9 also rip and push-load. Fleet averages 6,000 cu. yd. of earth moved a day. Roadbed will be 40 ft. wide. Contractors agree Cat-built machines are dependable.



←For more facts, circle No. 216

Distributor doings

Universal Motor appoints

The Smith-Meeker Engineering Co., 157 Chambers St., New York, N. Y., has been appointed a distributor in the New York metropolitan area for the Universal Motor Co., Oshkosh, Wis. The new dealer handles the firm's line of electric power and light plants, which includes gasoline and diesel-engine-driven models of industrial and marine types.

Stanco names manager

Bernie Ashoff has been appointed midwest area manager for Stanco Mfgs. & Sales, Inc., Santa Monica, Calif. From Chicago, Ill., headquarters, Ashoff will coordinate activities of Stanco dealers in the area.

Stanco distributes Hiab hydraulic truck cranes, FLYGT submersible pumps, Pionjar rock drills and Stenberg universal woodworkers.

H. O. Penn promotes

Frank K. Crehan has been appointed parts representative by H. O. Penn Machinery Co., Inc., New York City. Crehan will cover Westchester County and the Bronx, N. Y., and lower Connecticut.

Bollard distributor news

The Bollard Asphalt Plant Division of the Colonial Iron Works, manufacturer and designer of asphalt plants and auxiliary components, Cleveland, Ohio, has appointed seven distributors to represent its line in ten states.

The new distributors include the Earl Ives Equipment Co., 1585 Mentor Ave., Mentor, Ohio, for northern Ohio from Lake Erie to east-west U. S. 40; Ivan W. Benson, P. O. Box 29, Decatur, Ga., for Alabama, Georgia, and South Carolina; The Tulsa Machinery Co., 102 S. Cheyenne, P. O. Box 306, Tulsa, Okla., for that state; and Standard Equipment & Supply Co., Sixth and Palm, North Little Rock, Ark., for Arkansas, except the counties bordering on the Mississippi River.

The O. B. Avery Co., Inc., 1325 Macklind Ave., St. Louis, Mo., serves the eastern half of Missouri and the southern half of Illinois; The Construction Equipment Co., 21720 W. Eight-Mile Road, Detroit, Mich., covers that state, except for the Upper Peninsula; and The Southern Machinery & Supply Co., 2745-51 Shenandoah Ave. N. W., Roanoke, Va., serves that state.

Pioneer Engineering news

W. I. Clark Co., 2195 Dixwell Ave., New Haven, Conn., has been appointed a distributor by Pioneering Engineering, Division of Poor & Co., Minneapolis, Minn. Clark will cover the state of Connecticut and Berkshire, Franklin, Hampshire, and Hampden counties in Massachusetts.

Field Machinery Co., 300 Binney St., Cambridge, Mass., has been named to handle the firm's entire line of highway and heavy-construction machinery in the eastern half of Massachusetts, and Rhode Island.

Parsons names Texas firm

The Texas Machinery & Equipment Co., Inc., 750 North Grand, Amarillo, Texas, has been appointed exclusive distributor for western Texas by the Parsons Co., division of Koehring Co., Newton, Iowa. The new dealer handles the complete range of the firm's Trenchliner model.

Parker accumulators distributed by Hein

The Parker-Hannifin Corp., Cleveland, Ohio, has appointed the Louis H. Hein Co. of 15 W. Lancaster Ave., Ardmore, Pa., 232 West Side Ave., Jersey City 5, N. J., and 703 Light St., Baltimore, Md., a distributor of Parker piston-type hydraulic accumulators, made by the Parker Hydraulics Division, Cleveland.

Texas dealer for Clark

Western Machinery Co., Inc., 3818 S. Treadaway, Abilene, Texas, has been appointed to sell and service Michigan tractor shovels, tractor dozers, tractor scrapers, and excavator cranes produced by the Construction Machinery Division, Clark Equipment Co., Benton Harbor, Mich. The dealer will cover a 21-county area.

Depco made B-E dealer

Depco Detroit Corp., 15721 Telegraph Road, Detroit, Mich., has been appointed a distributor for the Bucyrus-Erie Co., South Milwaukee, Wis. The new dealer offers parts and service facilities for Hydrocranes, Hydrohoes, and Hydroshovels in eastern Michigan.

Davey names four dealers

The Davey Compressor Co., Kent, Ohio, has appointed four new dealers to handle its complete line of portable

Allied Asphalt Paving Company's new Simplicity S-200 electric-powered plant with automatic controls. 8000-lb. mixer. 10'x20' dryer. Air washer. Filler dust handling system. Simplicity hot well asphalt storage tank. Located at Hillside, Illinois, about 12 miles west of the Chicago Loop.

QUICK AS A CAT

QUIET AS A MOUSE

CLEAN AS A PIN

After operating a Simplicity S-75 plant for ten years Allied required greater capacity, quick changes in asphalt mixtures and quiet and clean operation. After comparing several makes of plants they decided Simplicity S-200 was the complete answer because:

With automatic weighing and batching of four tons per batch it is—QUICK AS A CAT!

With quiet roller chains, totally enclosed motors and reducers, bigger but slower moving dryer, elevators and mixer, and vibrationless tubular columns it is—QUIET AS A MOUSE!

With dust housings, fugitive dust system and the universally used Simplicity Air Washer it is—CLEAN AS A PIN!

THE SIMPLICITY SYSTEM

FROM BUILDER TO BUYER BETWEEN MEN WHO KNOW

THE SIMPLICITY SYSTEM CO.

SHOLAR AVENUE PHONE MAdison 2-2144

CHATTANOOGA 6, TENNESSEE

DEPENDABLE

For more facts, use Request Card at page 18 and circle No. 217

air compressors, truck-mounted units, parts, and accessories. The dealers are Adams Construction Equipment Co., 1342 W. Church St., Orlando, and 3130 N. W. 41st St., Miami, Fla.; Baker Equipment Engineering Co., 2401 Hutchison Ave., Charlotte, N. C.; S. M. Christhilf & Son, Inc., Timonium, Md.; and Utilities Equipment Co., Inc., 821 S. Barksdale, Memphis, Tenn.

American Pecco news

The American Pecco Corp., Federal Savings Bldg., White Plains, N. Y., is now exclusive representative in the United States and Canada for the Pecco construction crane, formerly known as the Universal-Peine slewing tower crane.

Dealer's exchange setup on rebuilt rollers, idlers becomes profitable side line

Rebuilding worn tractor rollers and idlers with submerged-arc automatic welding is becoming as popular as retreading tires. Taking advantage of this, Beckwith Machinery Co., a Caterpillar dealer operating in western Pennsylvania, West Virginia, and Maryland, has added profits to its operation by maintaining a stock of rebuilt rollers that it supplies to customers on an exchange basis. Their price depends on the amount of measured wear on the worn roller that the customer turns in. The worn part is then rebuilt and placed in stock to be issued to a new customer. This service is called Beckwith's Fair Price Roller Exchange Plan.

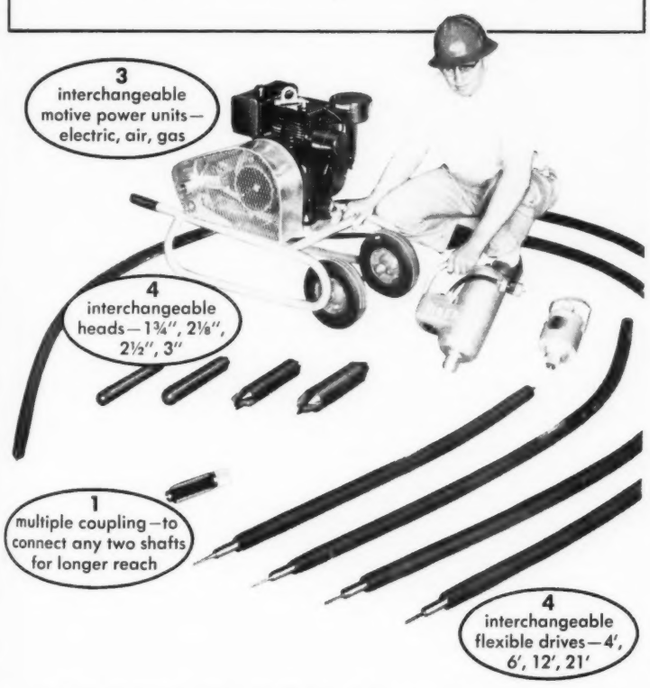
Rebuilding rollers

Beckwith's mechanics first steam clean the worn roller to remove all grease and dirt. The rollers are then put on a multiple-spindle Multimatic welding fixture, which handles six rollers at a time. The welding fixture, resembling a turntable positioner, has a boom-mounted Lincoln Electric submerged-arc welding head. The turntable revolves to position each of the six spindles under the welding head, one at a time. It also tilts the rollers to position for welding the flanges.

Mounting six rollers on the one fixture has the advantage of reducing bore shrinkage during welding. With six spindles, only one complete layer of build-up deposit is put on a roller at one time. Then the turntable rotates and a second roller receives one layer. This process con-

(Continued on page 28)

64 Concrete Vibrator Combinations from 12 Basic Components!


3 interchangeable motive power units—electric, air, gas
4 interchangeable heads—1¾", 2⅛", 2½", 3"
1 multiple coupling—to connect any two shafts for longer reach
4 interchangeable flexible drives—4', 6', 12', 21'

Quickly and Easily, in the Field, your men can assemble any one of 64 different concrete vibrator combinations from the 12 basic components shown above!

Because the Viber line is the most versatile line available, Viber flexible-shaft internal vibrators help you reduce your capital investment—reduce your day-to-day operating and maintenance costs—meet *all* your concrete vibrating needs.

Contact your dealer or write direct for detailed information.
Viber Company, 726 South Flower Street, Burbank 29, California.

VIBER CO

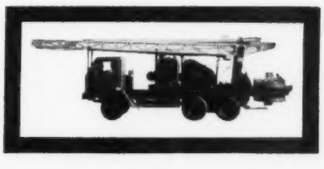
VIBRATORS

Pioneers and leaders in the manufacture of vibrators.

For more facts, use Request Card at page 18 and circle No. 218

Bores 1 to 10 ft. diameter holes as deep as 200 ft.

Drill caisson pier holes
Dig and shape belled footings
Pre-bore concrete piles
Explore for gravel deposits
Bore air shafts for tunnels
Dig manholes, cesspools
Precision Excavating
Sample underground deposits



ONLY A CALWELD can do all these excavating jobs. *It digs big* . . . holes up to 10 ft. in dia. *It digs fast* . . . down to 45 ft. in depth per hour. *It digs deep* . . . down to 200 feet. *It digs with precision* . . . absolute vertical holes to exact specification. It travels . . . on its own truck chassis. *It's one man operated* and it makes money for any contractor, large or small. *Write for information.*

CALWELD, INC.
7222 E. Slauson Ave.
Los Angeles, Calif.

CALWELD
BUCKET TYPE
EARTH DRILLS

For more facts, use Request Card at page 18 and circle No. 219

ONE PAYLOADER®

...but it's...
a BULLDOZER
a CLAMSHELL
a SCRAPER
a SHOVEL

A SINGLE INVESTMENT GIVES YOU 4-MACHINE UTILITY

One of the many useful attachments available only on a "PAYLOADER" in the rubber tired tractor-shovel field is the patented DROTT 4-in-1 bucket. With this bucket your "PAYLOADER" handles many more jobs than any other tractor-shovel . . . enables you to do jobs you may now be doing with hand labor . . . eliminates the need for several special machines . . . and it keeps your "PAYLOADER" busy every hour, every season.

It's a bulldozer

By raising the front lip, you have a rugged bulldozer blade that rolls the earth forward. Blade pitch can be altered hydraulically and you can penetrate well below ground level. If you desire to transport the spoil, you can merely close the front lip over the load and you have a normal bucket operation. Ideal for spreading materials also, as amounts can be varied as desired by bucket lip openings.

It's a clamshell

Enables you to pick up any material from stockpiles or windrows; grasp huge rocks, stumps, etc. because bucket opens wide and true clamshell action picks up the load without tractor travel. Ideal for picking up loose piles of materials on paved surfaces and on land clearing projects. Loads are dumped by merely opening the clamshell.

It's a scraper

With the clam lip partially open, you have a handy scraper that loads itself as the machine travels forward. The dozer moldboard boils the dirt up into the bucket and when the lip is closed the load can be carried wherever desired and dumped completely or spread in thin layers. It strips sod or grades and levels with extreme accuracy.

It's a shovel

The 4-in-1 can always be used as a regular shovel bucket to excavate, load, carry and dump in the regular manner. Pry-out pads and bucket tip action enable you to provide tremendous break-out action in tough digging and full bucket loads at all times. Bucket is dumped in normal manner or opened as a clamshell.

No other tractor-shovel gives you the versatility of a "PAYLOADER" and its attachments. In addition to the 4-in-1 bucket, there are Back-hoes, Spreaders, Side Booms, Lift Forks, Crane Booms, Sweepers and Snow Plows . . . plus special buckets to fit any job. Your "PAYLOADER" distributor will be pleased to discuss your problems and provide complete information — or return the coupon for full details. The Frank G. Hough Co., Libertyville, Illinois.

THE FRANK G. HOUGH CO. 11-B-3
762 Sunnyside Ave., Libertyville, Ill.
Send full data on 4-wheel drive "PAYLOADER" models with DROTT "4-in-1" buckets to:

Name _____

Title _____

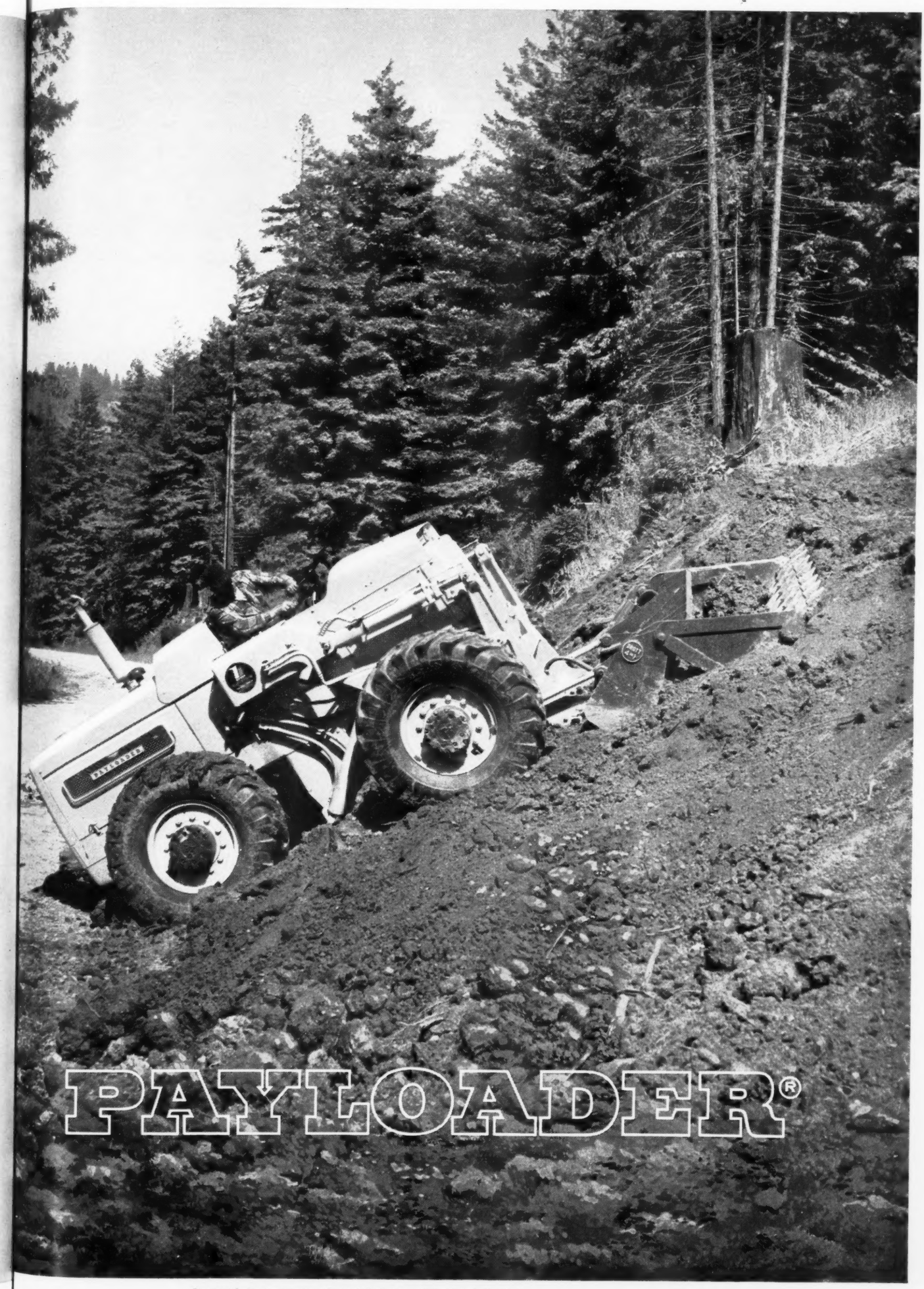
Company _____

Street _____

City _____ State _____

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY



For more facts, use coupon, or Request Card at page 18 and circle No. 220

(*Continued from page 25*)

tinues until all six rollers have received one complete layer before the first roller receives its second layer. In this way, each roller has ample time to cool between layers and does not build up too much heat.

The build-up material used on rollers is Lincoln mild steel L-60 electrode and H-535 hardsurfacing alloy flux. The procedure on all passes, except the last two, is to use 400 amperes of welding current with 28 arc volts. Rollers move under the head at a speed of 25 to 35 inches per minute, depending on size. Each head overlaps the previous one by about one-third the bead width. This produces a tough material that is capable of standing the severe shock loads sometimes encountered by the roller in service.

The last two layers are deposited by a similar procedure, except that the arc voltage is increased to 32 volts. Increasing the arc voltage causes the weld metal to pick up more alloy from the hardsurfacing flux. The higher alloy deposit has more abrasion resistance than the previous layers, so that it better resists the grinding action on the roller in service. This combination of a tough lower alloy build-up material, covered by the more abrasion-resistant, higher-alloy hardsurfacing layers, provides long roller life under normal working conditions. The use of hardsurfacing flux with mild steel electrode permits changing the deposit by simply changing voltage without changing materials.

After the running surfaces of the roller are rebuilt to size, the entire turntable is tilted about 60 degrees for welding up the flanges. This makes the side of the flange more nearly horizontal, so that it is easier to control the molten flux and weld metal and prevent spilling.

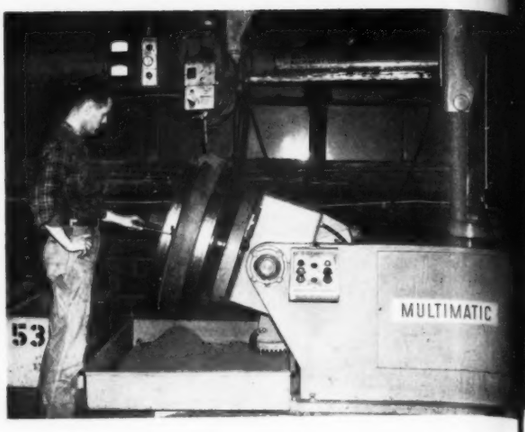
After the roller has been completely rebuilt, it is rebored to size. No finishing is required on the surface of the rebuilt roller. Bearings are inserted, when installed, with a specially built hydraulic ram machine. Rollers are then ready.

The cost of rebuilt roller shells is one-half or less than the price of a new replacement. The finished roller, complete with bearings, sells on an exchange basis for about one-quarter to one-third less than a new one.

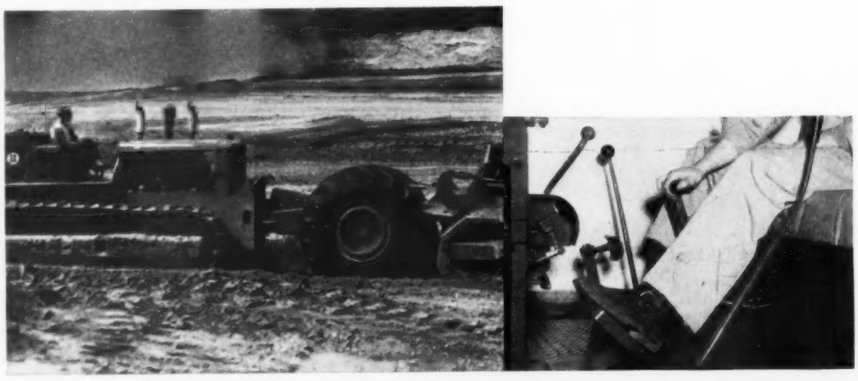
Rebuilding idlers

Beckwith also rebuilds idlers, using the same machine and same welding materials. A single-spindle turntable replaces the multiple spindle on the welding fixture so that only one idler is welded at a time. Welding on idlers is continuous with no cooling between layers.

Deposits used on idlers are the same as those put on rollers. The first layers are the lower alloy obtained with 28 arc volts, while the final two passes are the higher alloy obtained with 32 arc volts. As with the rollers, the turntable tilts for



In the shop of Beckwith Machinery Co., Pittsburgh, Pa., a Multimatic fixture with Lincoln automatic head rebuilds six worn tractor rollers at one time. The dealer maintains a supply of rebuilt rollers that are supplied to customers on an exchange basis.



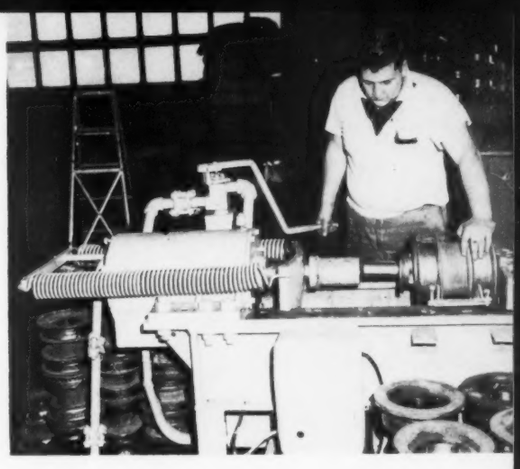
FEATHER-TOUCH CONTACT

As the TD-24 pushe proaches the Payso operator slows th speed *with* one ha power-shifting pla system; and by dep ing the foot decele He gets feather-t contact without dec ing, brake-riding throttle change!

HIGHER REVER

Operator uses dec rator pedal to slow gine at end of pu run, permitting fa reverse shifting. Fas verse speeds, cou with power-shifted p etary steering sys allows TD-24 opera to reposition pusher tra fast and rec scraper pick-up t

◄ After the roller is rebuilt, the bores are honed to size. This is the only finishing operation required on the rollers.



A specially built hydraulic press assembles shafts on the rebuilt roller. The rollers are then ready for Beckwith's stockroom, ready for sale. ►

welding up the side of the flange, after the running surfaces have been finished.

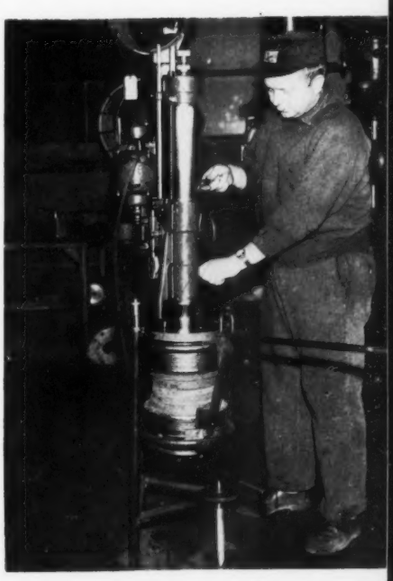
When welding disk-type idlers, the operator pierces a hole in the side of the disk before welding. This permits steam, caused by the welding heat acting on water trapped inside the idler, to escape rather than rupture the idler.

After welding disk-type idlers, the operator welds four or five pins between the two disk webs. This holds the webs apart, so that shrinkage stresses cannot distort them and pull them together.

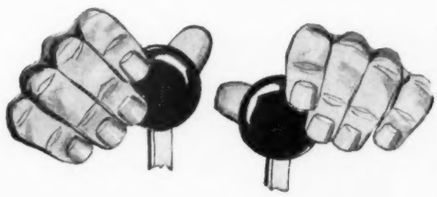
Rebuilt idlers save the user about one-third the price of a new idler. This assumes that the idler is sent in for rebuilding before it is too severely worn. If the idler is too badly worn, it is necessary to rebuild parts with manual electrodes before starting the automatic welding. When this is necessary, rebuilding costs increase and savings are less.

Beckwith has kept track of many of the parts rebuilt, and the firm finds that they stand up at least as well as new ones and, frequently, last longer. Response has been enthusiastic, since Beckwith's customers have found that it pays to rebuild worn tractor parts.

THE END



Rebuilt idlers is done on the same Multimatic machine that welds rollers. A single-spindle turntable replaces the multiple spindle on the fixture, and the procedure is similar to that used for welding rollers.



Your operators have fingertip control of greater push-loading profits because...

PLANET-POWERED "24's" beat other rigs on all four steps of the push cycle!

"CONSTANT CONTACT" LOADING

Releasing foot decelerator instantly applies full power, for efficient loading. Power-shifting either track into high range maintains solid pusher contact on curves—applies TD-24's full power, through both tracks!

GEAR HIGHER KICK-OUTS

Once scraper is fully loaded, the TD-24 *follows through* as operator power-shifts on-the-go with one hand to higher gear range, boosting speed of both units 27%. This allows most scrapers to come out of the cut a gear higher.

Your push-loading profits are in your operator's hands. And your operators know they can load out more scrapers every shift when their hands control the boss of the borrow pit—the International TD-24 crawler. The four-step pusher cycle (shown) pinpoints reasons why your operators and TD-24 pushers can increase production with easier control—from contact through kick-out.

Only the TD-24 gives you this big difference in pushers: more productive effort at the fingertip command of your operators! Exclusive Planet Power steering lets your operator: 1) keep pusher speed matched to that of the scraper; 2) power shift either or both tracks up or down a full speed range with a mere flick of the finger; and 3) apply full power to both tracks even if scraper cut is made on a curve.

And your TD-24 operators can fully utilize the decelerator pedal to cut maintenance costs three ways. The decelerator reduces engine clutching; eliminates brake pedal riding for steering; and permits feather-touch scraper contact without slam-bang jarring of operators and machines.

Get all of these TD-24 features that cut the cost of loading out paydirt, with either a Torque Converter or gear-drive tractor best suited to your needs.

If you're a dirtmover, get the TD-24 stay-on-the-job story by checking with any of the thousands of owners. Ask about the comparative life of such important components as track rollers and rails, engine, transmission, and planetary steering system. Get a TD-24 on your job today by calling your International Construction Equipment Distributor for a demonstration. Then you'll see how the TD-24 earned the right to be called "Boss of the Borrow Pit."

International® *Construction Equipment*

International Harvester Co., 180 North Michigan Avenue

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

For more facts, use Request Card at page 18 and circle No. 221

A model of Cobo Hall and the convention arena in Detroit's Civic Center as it will look on completion in 1960. The exhibit hall will have 400,000 square feet of floor space, and the 315-foot convention arena will seat 12,500. Located on the Detroit River, the facility is within walking distance of downtown hotels.

Steel goes u

In Detroit, construction men are completing steelwork for a building they may be using themselves one day. It's a big building. Big enough to lose an AGC convention in. Big enough to hold all the heavy equipment that's putting it up.

The $42 million Cobo Hall and Arena are designed to have plenty of room to hold the king-sized equipment and the thousands of delegates attending a convention associated with the construction industry. With its 400,000 square feet of exhibit area, 30-foot clearance, and 400-psf floor loading, the exhibit hall will provide an ideal showcase for such items as tractor-dozers, scrapers, paving machines, and other such knickknacks. Immediately adjacent to the building is a surface parking lot of 400-car capacity, which can also be used for display of oversize equipment.

For the giant-sized cranes and batch plants, the 73-foot 6-inch clearance of the circular arena will be ideal. Its 23,500 square feet of level concrete floor is supported by the ground and has almost unlimited loading.

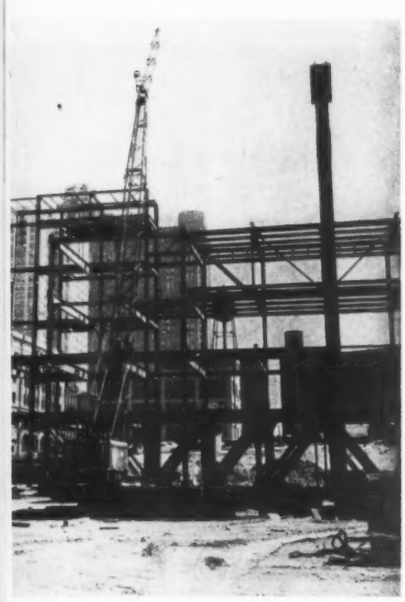
Contractors will have to wait until May of 1960, however, for the exhibit building to be completed. The arena is expected to be ready for use in December, 1960.

The two adjoining buildings are located in the Civic Center bordering the Detroit River, within walking distance of downtown hotels. The 3-story 900 × 500-foot exhibit building spans the John C. Lodge Expressway. The 315-foot-diameter 120-foot-high arena has a seating capacity of 12,500. Enclosed concourses at three levels connect the buildings, making it possible for them to be used separately or as a unit.

The convention-exhibit center, which includes a gross utilized floor space of 51 acres, was designed by Giffels & Vallet, Inc., and L. Rossetti, associated engineers and architects of Detroit. The project is under the jurisdiction of the Civic Center Commission, 151 W. Jefferson Ave., Detroit.

Construction starts

With the award of a $3.1 million contract to Darin & Armstrong, Inc.,



Steel framing for the east section of the exhibit building is set by a Lima 1250 SC crane. The trusses being assembled on the ground—the largest members of the exhibit building—are for the 500-foot-wide roof.

"USING FORD HEAVIES HAS MADE A BIG CUT IN OUR MAINTENANCE COSTS"

says Allen Grosse
Fleet Supervisor
Green Bay Box Company

Handling heavy loads with ease, this Ford C-1000 used by the Green Bay Paper and Pulp Company (an affiliate of the Green Bay Box Co.) grosses 60,000 lb. It is equipped with 260-hp 477-cu. in. Super Duty V-8, Extra Heavy Duty 5-Speed transmission and 6.50 to 1 rear axle ratio.

GO FORD-WARD for Savings, Style and Stamina!

Whatever your job . . . wherever you do it—you'll find Ford Heavies and Extra Heavies are engineered and built to do it better! And the '59 improvements in these models will bring still more benefits to your operation.

Greater operating economy with new, faster rear axle ratios and wide choice of transmissions.

More efficient parking brake of the internal expanding type has approximately 50% greater stopping and holding ability, requires less than half the operating effort needed for the previously used type.

Higher payloads and longer life with new, higher-capacity front and rear axle options.

Factory installed tractor package custom-fitted to Ford trucks for safer, more dependable braking.

Yes, the new '59 Ford trucks are here to take you *Ford*-ward for savings, *Ford*-ward for modern style and stamina. See your Ford Dealer today!

...n ultramodern convention center

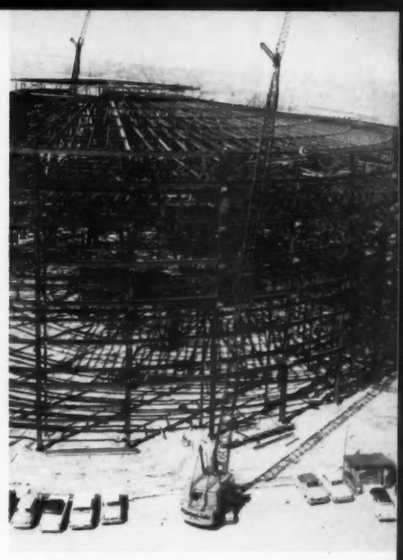
Detroit, in June, 1956, construction started on the substructures of the buildings. The biggest item in this contract was the setting of some 4,400 cast-in-place piles. The piles were driven about 95 feet through plastic clay to hardpan. Raymond Concrete Pile Co. was the subcontractor on this work.

The erection of the 20,000 tons of structural steel began late in 1957, with the $8.7 million contract being handled by R. C. Mahon Co., Detroit. The firm fabricated as well as erected the big steel members. Whitehead & Kales, River Rouge, Mich., subcontracted the fabrication and erection of steel for the arena, the meeting-room and banquet-hall section, and the spiral ramp to the roof parking area on the exhibition building. The general contractor in charge of all construction—except for the arena—is O. W. Burke Co., Detroit.

Suspended truss for long span

The largest members of the 13,000 tons of structural steel for the exhibit building were the roof trusses. Sections of these heavy riveted trusses were hauled in by truck and bolted together on the ground to form a truss unit. These units were lifted by crane to make up the completed trusses of the 500-foot-wide roof. All field connections were made with

(*Continued on next page*)



A Manitowoc 50-ton crane with 120-foot boom and 30-foot jib sets steel in place to finish out the top ring of the arena. Field connections are being made with high-tensile steel belts.

CONVENTION FACILITIES

Exhibit Hall

First floor: Exhibit area of 100,000 square feet, which may be partitioned into three units. Clearance of 19.5 feet, 600-psf ground-slab loading, 90,000-square-foot storage space, and 200-seat restaurant.

Second floor: Main exhibit area of 300,000 square feet, which may be divided into three separate halls. Clearance of 30 feet, 400-psf loading, ballroom with 3,250 seating capacity for meetings, and five additional meeting rooms seating a total of 3,350.

Third floor: A total of 27 meeting rooms, with seating capacities varying from 80 to 820 and a total capacity of 6,600. A cafeteria-type restaurant seating 1,500.

Conveniences: Air conditioning, public-address system, internally connected ramps, escalators, and elevators between floors. Utilities on floor include both 120/208 and 277/480-volt electricity, gas, water, air, telephone, and drainage. Light intensity at floor level is 100 foot-candles.

Arena

Total capacity of 12,500, with 9,500 permanent seats in balconies. Level concrete ground slab of 23,500 square feet. Clearance of 73 feet 6 inches. Truck drive-in. Doors 22 feet 6 inches wide and 20 feet high.

Parking

Total parking in building area is nearly 4,000 cars. This figure includes 1,150 on the exhibit-hall roof, 606 in the two-level garage below the exhibit hall, 415 underground in the adjoining building, 740 on surface lots, and 700 in the Ford Auditorium underground garage.

"Our records show that our average monthly parts cost, including major overhauls, has been reduced over 24%.

"Our Fords have given us less trouble than any other make of truck we've owned! Also, our Ford Dealer has always given us immediate and very good service. We've never had any downtime waiting for parts. They're always available at our Ford Dealer's, so we don't have the problem or expense of carrying a big parts inventory.

"Our drivers sure like the 'hillability' of the big Ford Tilts with their Super Duty V-8 engines! They say the 'Big V' has sure got it for power that seems to level out the steepest hills. And the Tilt Cabs are tops for maneuverability and riding ease.

"Performance plus economy . . . that's why we're sold on Ford trucks. We started using Fords when we opened our trucking department in 1954, and today 28 of our 35 trucks are Fords."

New Styleside pickups! Notice the handsome new grille, dual headlights, stronger wrap-around bumper. 6½-, 8- and 9-ft. boxes available in Styleside or Flareside models. Short Stroke Six or V-8 engines.

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

For more facts, use Request Card at page 18 and circle No. 222

Where the exhibit building spans the John C. Lodge Expressway, it is carried by girders up to 132 feet long. One of the big girders is delivered by a Ford C 900 truck and an 8-wheel dolly. As

the girder is picked up by a Lima 1250 SC crane, truck and dolly are removed so that the steel can be swung into place. The girder

is being lowered into position for the 900 × 500-foot building that will rise 3 stories above the expressway. A Bay City backhoe in one of the expressway lanes is excavating for drainage tile.

(Continued from preceding page)

high-tensile steel bolts.

A 180-foot suspended truss and two 30-foot cantilever trusses span the 240 feet between the interior columns of the exhibit hall. The 180-foot pin-link-supported truss is supported at each end by pin-connected links from the ends of the cantilevers. Flanking the center span are 120-foot trusses (90-foot anchor span and 30-foot cantilever). Their weight tends to balance the weight of the trusses in the center span. The pin-connected truss swings on four link pins of 4-inch diameter, permitting two expansion joints for the length of the roof. Only one will be active after installation of purlins and the concrete roof slab.

Big cranes for big steel

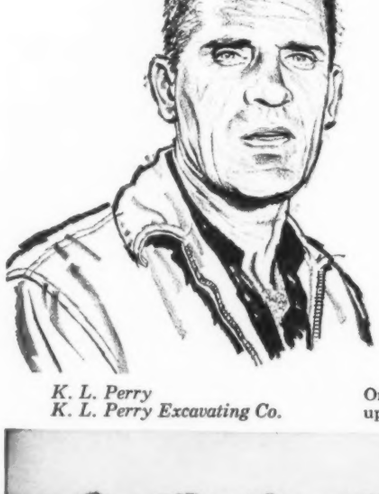
Two 100-ton cranes handled the big lifts. A pair of Lima 1250 SC cranes had no trouble lifting the 115-ton longitudinal carrying trusses to a height of about 80 feet. Only one of the Limas was needed to set up the 42-ton, 78-foot built-up steel columns. For the smaller members, the contractor used a Manitowoc 2000 crane.

Long plate girders were needed to span the divided six lanes of the expressway passing beneath the building. The two spans of continuous design over center supports were made with girders up to 132 feet long. The girders were snaked through the city early in the morning, with a truck on one end and a dolly on the other. Generally, only one of the cranes

Using a P&H arc welder, workmen spot-weld the Mahon steel decking to the roof frame of the exhibit building. The built-up roof will serve as a parking area for 1,150 cars and as a helicopter deck. Arena steel is being erected in the background.

He moves big yardage on housing development

with two self-loading 7-yd Allis-Chalmers motor scrapers . . . hauling 1,500 to 3,000 feet



K. L. Perry
K. L. Perry Excavating Co.

On a new development location for a big residential subdivision, K. L. Perry Excavating Company of Kansas City, Missouri, has found a new and profitable earth-moving team—two Allis-Chalmers TS-160 motor scrapers. Perry bought them on the basis of a demonstration which proved their maneuverability, speed and ability to self-load. Now the TS-160's have sold him on dependability and economy, too.

One of Perry's self-loaded TS-160's leaves the cut as the other returns to keep up the 1,000-yard-a-day pace on Vineyard Woods job.

Look ahead... *move ahead*...and stay ahead with

was needed to set the girder in place.

Over 200 tons of 1-inch and ¾-inch high-tensile steel bolts are being used to make the field connections in the exhibit building. The bolting crews work with Chicago Pneumatic impact wrenches powered by two Ingersoll-Rand compressors.

Lightweight concrete on floors

The use of lightweight concrete in the upper floors of the exhibit building reduced the load on the columns and saved money on the design of the supporting substructure. The Haydite concrete for the roof is poured on top of Mahon ribbed steel decking, which is spot-welded to the steel beams. For the slabs not supported by long-span structural steel, a slag aggregate is being used.

Parking roof

Lightweight concrete also forms the base of the 1,150-car parking roof. Starting at the bottom and going up, the composite roof is made up of steel decking; 4½ inches of reinforced lightweight concrete, measured from the bottom of the ribs; 4-ply built-up membrane; a 2-inch layer of asphalt-bound perlite insulation; and 1¼-inch-thick asphalt block.

The structural steel supporting the roof is positioned to give a series of gentle hills and valleys to the completed roof surface. The valleys guide rain water to interior downspouts.

Arena erection

At the same time that Mahon was putting up the steel on the exhibit building, Whitehead & Kales were going around in circles on the arena structure. A circle of 315-foot outside diameter, to be exact.

The steel skeleton of the building consists of two concentric rings of columns supporting 32 radial trusses. The roof trusses tie into a steel hub at the center.

Erection of the long steel in the stiff breezes that blow off the river front took men who knew what they were doing. And it took some good-sized cranes.

One of the first steps in the operation was to erect a temporary steel tower at the center of the building. The 75-foot-high tower supported the 15-foot-diameter 30-foot-high hub to which the trusses were connected.

The last section of steel for the arena roof is lifted by a Manitowoc 3900, a 60-ton crane with 140-foot boom and 30-foot jib. Radius trusses tie into a 15-foot, 27-ton hub that is supported during erection by a 75-foot-high 4-legged steel tower.

The next step was to go up with three outside columns. These were tied across to the hub with three roof trusses. Then three columns opposite from the first three were erected, and roof trusses tied across to the hub. In this manner, the superintendent kept the steel in balance. Erection on one side of the circle was always balanced by erection on the other side.

The trusses were bolted together on the ground from the individual members. Erection of the heavier 40-ton trusses was handled by two Manitowoc 3000 50-ton cranes. The cranes generally used a 120-foot boom and a 30-foot jib. A Manitowoc 3900 60-ton model also assisted in the work.

Four to five bolting gangs were kept busy installing high-tensile steel bolts. Crews used Ingersoll-Rand impact wrenches powered by a Jaeger 365 compressor.

Personnel

Fred Agli is the general superintendent for O. W. Burke Co. Michael T. Minasian is the assistant general superintendent. For the R. C. Mahon Co., Carl Washburn is the field superintendent. Supervising the steel erection on the arena is William Fisher.

THE END

Fred Agli, general superintendent for O. W. Burke Co., points out one of the two 4-inch pins which carry one end of the center truss. An expansion joint will be located at this point in the completed roof.

Short turning radius (less than 25 ft) and positive hydraulic control make maneuvering through tight spots a simple operation for Perry's TS-160's.

The TS-160 is the only motor scraper near its size available with forced ejection and extra high apron lift that assures easy ejection of toughest material.

TS-160's move dirt faster . . . cut operating costs in half

Earth-moving operations in modern housing developments have to move fast to keep costs low . . . and to set the pace for production line methods in home construction. On the Vineyard Woods job, for instance, to maintain the building program, Perry had to average 500 cubic yards per day, hauling up to 3,000 feet.

His two Allis-Chalmers TS-160 motor scrapers handled it with plenty to spare. Self-loading, they frequently topped 1,000-yard production daily. At the same time, operating costs were cut in half compared to his previous equipment. Perry says his Allis-Chalmers motor scrapers are big producers . . . helped him finish contracts days ahead of schedule. He now bids and makes a profit on contracts he couldn't consider before.

Self-loading, compactness and maneuverability make TS-160's naturals for development work

Primary factors in Perry's choice of Allis-Chalmers TS-160's were their demonstrated high-speed and self-loading ability. However, since he's had them, other benefits have become apparent. Perry is particularly pleased with their maneuverability. They turn in less than 25 feet—a valuable timesaver in limited space on many housing development operations. Hydraulic power steering makes maneuvering in tight quarters easy and efficient.

They also save time and money between jobs . . . move on highway at up to 25.4 mph. Operator comfort and ease of handling were noted as outstanding by Perry and his crew.

Performance sold the machines . . . dependability proved their value

K. L. Perry checked them all when he was in the market for high-speed dirt-moving equipment. He says, "We were sold by demonstration that the Allis-Chalmers machines were best—but the real proof came with performance like we had on the Vineyard Woods development in Kansas City. We've had only routine maintenance on the machines in eight months since we bought them. They put us in position to get the 500-home Kentucky Hill job at Independence, Missouri."

This TS-160 motor scraper story is a good example of the value in talking things over with your Allis-Chalmers construction machinery dealer. He knows the earth-moving business and can help you choose the machines that will help you most. Ask him for a demonstration right on your job. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

For more facts, use Request Card at page 18 and circle No. 223

Manufacturer memos

Robert G. Allen, member of the board of directors and the executive committee of Bucyrus-Erie Co.

Robert G. Allen has been elected to the board of directors and the executive committee of **Bucyrus-Erie Co.**, South Milwaukee, Wis. Allen is executive vice president in charge of all manufacturing and sales for the firm.

Prior to joining the company last year, Allen was president of the Pesco Products and Wooster divisions of Borg-Warner Corp.

Lewis C. Black has been appointed manager of domestic sales. He had been manager of sales for large excavators since January, and had previously served as assistant general sales manager of large machines and blast-hole drills.

A new district sales representative for the firm's Hydrocranes, Hydrohoes, and Hydroshovels is **Phil Peterson.** From New York City headquarters, he will cover Pennsylvania, Virginia, West Virginia, Maryland, lower New Jersey, and the District of Columbia.

C. W. Massie, general manager of the Construction Machinery Division, Clark Equipment International, C. A.

Clark Equipment International, C. A., has appointed **C. W. Massie** general manager of its Construction Machinery Division. Clark Equipment International is a wholly owned subsidiary of **Clark Equipment Co.,** Buchanan, Mich.

In his new position, Massie will be in charge of sales and overseas distribution of all products of the division, and will also handle distributor relations, sales promotions, demonstrations, and other sales-service activities.

The parent company's Construction Machinery Division has named **Alvin E. York** and **Wendell V. Richards** to the newly created posts of sales manager and assistant sales manager, respectively. York was formerly manager of parts and service, and Richards was product specialist manager.

This division has also appointed **Jack B. Hart** its Washington, D. C., representative. He will act for the company in negotiating government business and federal contracts.

James C. Richards, Jr., vice president of sales for B. F. Goodrich Industrial Products Co.

James C. Richards, Jr., has been named vice president of sales of **B. F. Goodrich Industrial Products Co.,** a division of B. F. Goodrich Co., Akron, Ohio. He succeeds **R. V. Yohe,** newly elected president and chief executive officer of **B. F. Goodrich Canada.**

Richards, who joined the firm in 1934, has been vice president of sales for B. F. Goodrich Chemical Co., another division, for the past six years.

Charles F. Hill has been appointed general manager of **Massey-Ferguson Industrial Division,** Massey-Ferguson, Inc., Wichita, Kans. Hill succeeds **Charles J. Davis,** who resigned from that post but continues to be associated with the division until present planning of programs to be applied in 1959 is completed.

The Worthington Corp., Harrison, N. J., maker of portable air compressors and other contractors' machinery, has elected **A. E. Carter** as vice president of manufacturing. Formerly with Ford Motor Co., Carter succeeds **Leslie C. Ricketts,** who is now working full time as group vice president of five Worthington operating divisions in New Jersey and Massachusetts.

The company has appointed **Walter A. Penner** district office manager of the Denver branch, succeeding C. R. Walbridge, who has resigned.

The Galion Iron Works & Mfg. Co., Galion, Ohio, has appointed **William R. Troyer** sales manager of the special products division, and **Porter Little** supervisor of sales and service training on Galion rollers and graders. In his new position, Troyer will be responsible for sales and promotion of 3-wheel rollers and Model 503 motor graders, both with vibratory compactors. He will offer direct field help to all Galion distributors and their salesmen.

Charles O. Evans, who for some time has been service manager of the company, is now being assisted by **Carl Osborne.** Osborne was formerly with the service department of Clark Equipment Co.

FIRESTONE ON-THE-JOB TIRE SERVICE ANSWERS YOUR TROUBLE CALLS ROUND THE CLOCK!

Firestone Giant Tire Service eliminates hours of costly downtime!

Firestone service trucks are on the job 24 hours a day to beat your downtime due to tires. Completely equipped trucks are ready to service construction tires on the spot. Trained servicemen have the know-how and the tools to handle the largest tubeless or tubed off-the-highway tires. Besides emergency tire service, a Firestone Tire Expert inspects tires regularly—checks for proper inflation. Count on Firestone to turn downtime delays into worktime profits! Contact your Firestone Dealer or Store about Firestone's Giant Tire Service. Combine Firestone's Giant Tire Service with Firestone off-the-highway tires to hold down tire costs. Remember—there's a Firestone tubeless or tubed tire for every piece of equipment on construction projects.

ROCK GRIP WIDE BASE® ROCK GRIP®
TUBELESS OR TUBED

When ordering new equipment always specify Firestone tires.

Enjoy the Voice of Firestone on ABC television every Monday evening.

Firestone

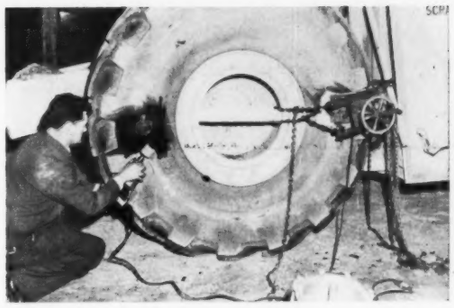
BETTER RUBBER FROM START TO FINISH

For more facts, use Request Card at page 18 and circle No. 224

Copyright 1958, The Firestone Tire & Rubber Company

Control off-highway tire costs with proper maintenance

by CARL D. SMITH
consultant on giant off-highway tires



Two sidewall cuts on a large earthmover tire are repaired with the tie still on the wheel. An electric spotter cures repair gum in a cut at right, while a workman buffs a filled and cured cut at left.

With rising costs facing him on all sides, today's contractor finds downtime practically a prohibitive item. Especially where costly machinery and components are concerned, maintenance is an increasingly important factor in efficient and profitable operations.

Not the least among expensive components essential to earthmoving work are giant off-highway tires. These tires represent a considerable investment at the outset; consequently, it is important to get the greatest possible use from them to avoid premature replacement.

Proper retreading and spot repairing are aids to prolonging tire life. Performed correctly and at the proper time, these maintenance operations will cut tire operating costs substantially.

Retreading

The development of giant nylon tires (14.00 and larger sections) through the refinement of nylon cord construction has given today's user of giant tires a tire body he can depend upon to outlast one or more retreads. This has been accomplished by eliminating the tendency of nylon cord to stretch and separate. The saving resulting from this development is apparent when one remembers that a retread gives as much service as the original tread, yet costs only one-half to two-thirds as much as a new tire.

Proper retreading depends on (1) selection of the tire or tires to be retreaded, (2) the quality of workmanship and materials used, and (3) the type and quality of the finished tread and its ability to perform with the efficiency of a new tire.

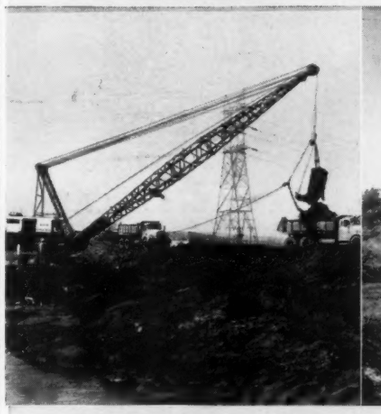
Before retreading, the tire should be thoroughly inspected inside and out to make sure the body is sound. It is questionable whether a giant off-highway tire with a sizable break in the body should be retreaded. After three years of service, few tires are good candidates for retreading; rayon tires are an especially bad risk at this late date. The 14.00, 16.00, and 18.00-section tires with body repairs can be more successfully retreaded than larger sizes; only very sound nylon bodies in sizes larger than 18.00 section should be considered for retreading.

The tire should not be taken out of service too soon, for good serviceable tread will have to be buffed away for the retread. On the other hand, the tire should not be left in service until the tread is worn too far, for injuries to the tire body may result.

(*Continued on next page*)

For more facts, circle No. 225→

Canal Contractors Benefit from Bucyrus-Erie Draglines—So Can You!



Sticky gumbo and soft footing made it tough for this 54-B. But the Bucyrus-Erie features that spell dependability on any job are at work for the contractor. This job is an improvement project for the Los Angeles River. Another 54-B is at work on this contract.

"I have never run across a comparable machine that is as durable or as fast as our 22-B," says the owner of the machine shown here. This dragline excavates earth in reconstruction of a drainage canal in New Mexico. It is owned by Joe A. Victor & Son, Albuquerque, N.M.

At a large mine in western United States, this Bucyrus-Erie 54-B excavates a channel leading to a settling basin for industrial wastes. The channel will carry water from the basin to a river outlet. Material excavated is gravel and dirt. This dragline and other 54-Bs on the property are praised by their owner for their long period of successful operation.

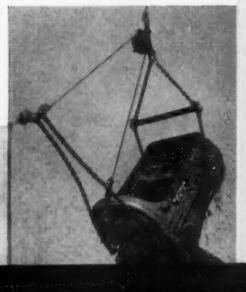
Here is one of four Bucyrus-Erie 38-Bs working on a large irrigation project south of Mexicali, Mexico. In this major cotton-producing area, fields must be flooded with water, which runs off into drains. To provide water for the crops in this extremely dry region, hundreds of thousands of pesos have been spent in construction of irrigation facilities. On this job as on similar jobs everywhere, the choice of excavators is Bucyrus-Erie.

Irrigation, drainage, and flood control contractors benefit from the high output performance of Bucyrus-Erie draglines. Available in a full product line with capacities ranging from ⅜ to 4 cubic yards, Bucyrus-Erie draglines combine balanced digging cycles with smooth operation and exceptional stability to deliver top output day after day, all year round. Compare the jobs shown here with your own. Read the capsule stories. Then get full details on how these machines can benefit you. See your nearby Bucyrus-Erie distributor today. 462E58C

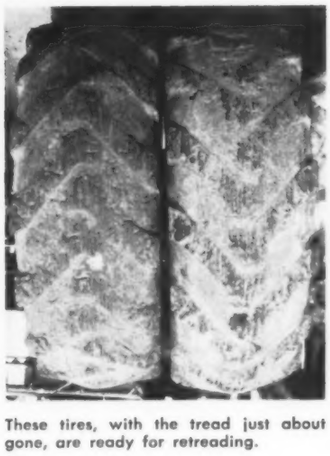
BUCYRUS ERIE

A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN



The best bucket for the best dragline is a Bucyrus-Erie bucket. Fast loading, smooth carrying, rapid dumping, these buckets have *durability* provided by BECOLOY. New-design buckets are available in a wide range of sizes—solid or perforated baskets—for light, medium, or heavy-duty work.



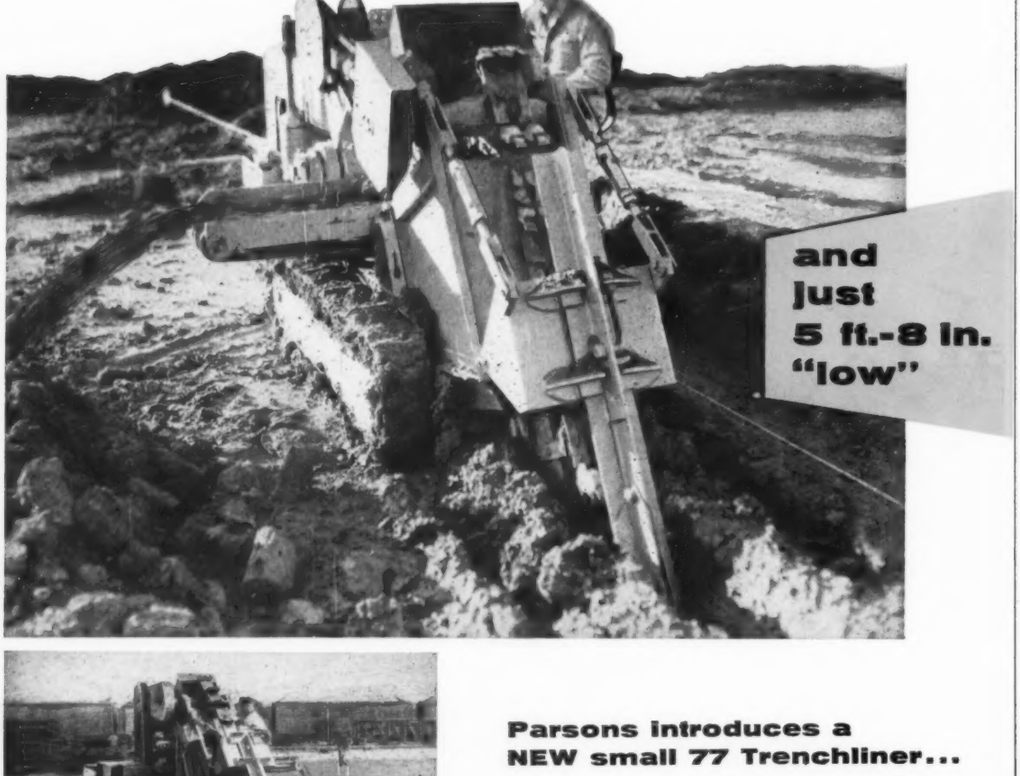
These tires, with the tread just about gone, are ready for retreading.

Here the old treads have been buffed down over the shoulders of the tires.

A heavy, wide slab of tread rubber has been stitched onto the tire bodies.

Here, wide retreads have been cured on the tires, making them like new.

Not much wider than a yardstick . . .



and just 5 ft.-8 in. "low"

Here's a companion-model utility trencher, mounted on rubber tires — the Parsons 88 Trenchmobile®. It makes self-powered moves over city streets, highways, through traffic at travel speeds up to 12.6 m.p.h. — maintains fast "work-and-run" schedules. Trenchmobile digs 8 or 16 inches wide, at depths to 5 feet. Ladder and wheel-type Trenchliners are available for digging up to 6 feet wide, 19 feet deep.

Parsons introduces a NEW small 77 Trenchliner...

. . . It's only 3 feet-8 inches wide. Working height, with boom in digging position, is just 5 feet-8 inches. What's more, this little Parsons 77 Trenchliner only weighs about 6500 pounds for convenient trailer-transport from job to job. Small in size, but big in capacity, the 77 has a work range that will surprise you. For instance . . .

Digs up to 5 feet deep

It produces from 4.4 inches to 21 lineal feet of trench per minute, in 32 hi-lo digging speed selections. You get trench widths from 6 to 18 inches, *and maximum digging depth of 5 feet!* The tiny 77 is heavy-duty in every respect. It has positive down-crowd on telescopic ladder boom. Self cleaning, cast-steel buckets are equipped with Parsons "Tap-In" teeth. Shiftable spoil conveyor is instantly reversible for controlled discharge. Compact and maneuverable, the 77 turns within its own length — each crawler is independently driven, independently braked. Better check what this small utility 77 Trenchliner can do on service connections, small mains, underground cables, lighting systems, curb, foundation footings. Ask Parsons distributor for demonstration, or write to us today.

Mail today to: PARSONS COMPANY, Newton, Iowa

Send literature on: ☐ *77 Trenchliner* ☐ *88 Trenchmobile*

NAME .....

TITLE .....

COMPANY .....

DIVISION .....

STREET .....

CITY, STATE .....

P802

PARSONS® TRENCHLINER® *A division of Koehring Company*

For more facts, use coupon, or Request Card at page 18 and circle No. 226

(Continued from preceding page)

The best time to consider retreading is when the original tread design is just about gone. At this stage, the tread has been worn to the place where it can render little service in traction or braking, and travel stability is low. At the same time, the cuts and chips in the tread have not reached through to injure the body.

The tread should be accurately and smoothly buffed down over the shoulders of the tires, and jabs in the tread should be skived out to give the retread a complete foundation across the face and down over the sides of the shoulders.

A heavy, wide slab of high-quality tread rubber is then firmly stitched to the tire body and out over the shoulders. This slab must be smooth so as to take a wide, deep tread during the curing process.

Finally, the retread is cured on. The width and tread radius (curvature) of the retread should come as close as possible to the tread dimensions of the new tires with which the older unit will work, so that traction, braking, and stability of operation will be uniform.

Some users of giant tires use their worn-down tires on free-rolling wheels, thinking they are getting some extra service from a tire before having it retreaded. This is false economy. A tire operating with practically no tread has its body exposed to all kinds of injury, just as a boxer without gloves risks injury to his hands—and, of course, to his opponent's jaw. A tire body by itself is unusable, at least from the standpoint of economy.

Giant tires should be retreaded for long economical service. Operation of the tire with a thin, worn tread may permanently injure the tire body and make retreading impracticable.

On-wheel spot repairing

Sidewall cuts are a real hazard to giant-tire life. Good, alert operators can keep them to a minimum, but the nature of heavy-duty off-highway work is such that virtually all giant tires run the risk of an occasional cut or gouge.

Unless such cuts are too severe,

they can be repaired. And quite often these repairs can be made with the tire on the wheel—which represents a sizable saving in tire-service expense.

Regardless of their length, sidewall cuts can be repaired with the tire on the wheel if the cut has not penetrated through more than 25 per cent of the actual cord plies in the tire: for example, 4 plies in a 16-ply tire, 5 in a 20-ply tire, etc. Deeper cuts may require a reinforcement on the inside of the tire.

To avoid unnecessary downtime, it is recommended that sidewall repairs be made when the machine is between operating periods or when it is out of service for other repairs.

An electrical sidewall spotter is needed for the repair, and the machine must be positioned near a 110-volt electric outlet. After the cut has been cleaned and buffed out, it is filled with repair gum. The electric spotter is then applied to cure the repair gum. The effect of this curing is to "weld" the two pieces of rubber in the same manner that two pieces of steel are joined.

If tires are continued in service any appreciable length of time with cuts in the sidewalls, considerable damage may result. Dirt can work into the body of the tire. More important, tire-body flexing concentrates in such cuts, thereby weakening the tire at this point. A serious blowout, which may permanently put the tire out of service, can result from this practice.

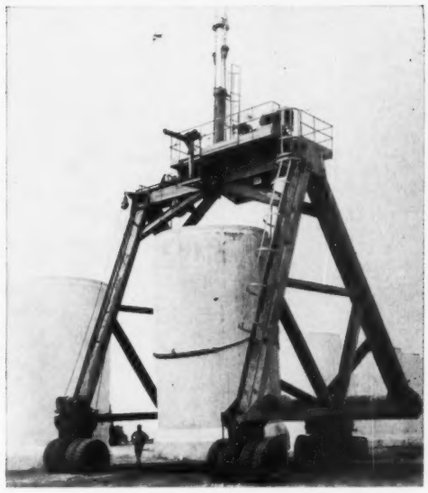
The cost of such repairs is very small in comparison to the cost of these giant tires. Because they can usually be made with no loss of operating time, they are an invaluable means of prolonging tire life and saving tire-operating expense.

(Continued next month)

Asphalt congress attended by The Asphalt Institute

At the third meeting of the International Asphalt Congress, held in Paris, France, late last month, The Asphalt Institute represented the United States at this country's first participation in the congress. R. O. Wilson—immediate past chairman of the institute's board, vice president of Col-Tex Refining Co., and manager of the Asphalt Division of Cosden Petroleum Corp.—gave a background sketch of the growth of the asphalt industry in America and discussed the achievements of the institute.

John M. Griffith, engineer of research for the institute, presented a paper, "The Treatment of Railroad Roadbeds with Asphalt," dealing with experimental developments in which asphalt is used to provide a penetration treatment of the ballast and protect ties and metal rail appurtenances. Since completion of one successful experiment of this nature, The Asphalt Institute and the Association of American Railroads have joined forces to foster additional experiments.



CRADLING A 90-TON SECTION of 24-foot concrete pipe, the 30-ton metal triangle called the Lifter-Tipper heads for a Long Beach, Calif., storage area of United Concrete Pipe Corp., which designed and fabricated the huge pipe conveyor. The 53-foot-high, 30½-foot-wide unit, which is pulled around the area by a tractor, has a maximum traveling speed of about 5 mph on twelve B. F. Goodrich 14.00 ×24 pneumatic tires. Under a weight of 240,000 pounds —the maximum weight of equipment and pipe section—the tires deflect about 20 per cent.

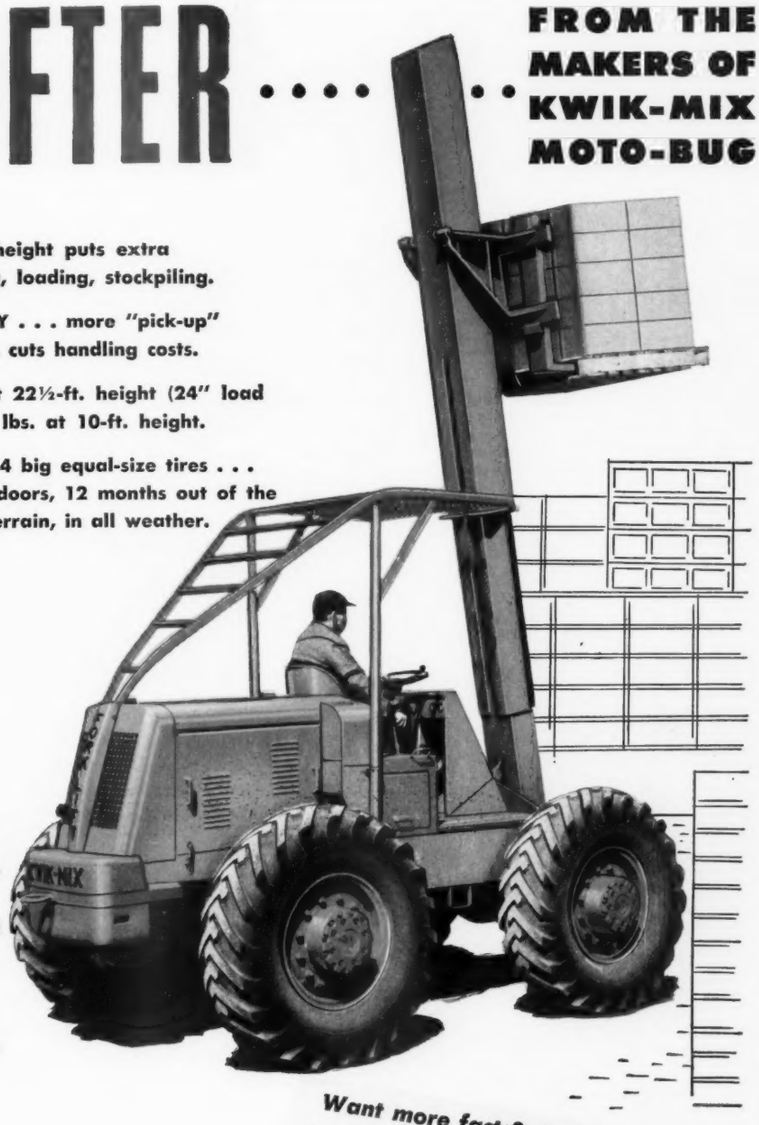
HI-LIFTER .... .. FROM THE MAKERS OF KWIK-MIX MOTO-BUG

22½-FOOT lifting height puts extra reach into stacking, loading, stockpiling.

BIG LOAD CAPACITY . . . more "pick-up" per lift saves time, cuts handling costs.

LIFTS 4,000 LBS. at 22½-ft. height (24" load center) . . . 6,000 lbs. at 10-ft. height.

4-WHEEL DRIVE on 4 big equal-size tires . . . works indoors, outdoors, 12 months out of the year . . . on any terrain, in all weather.



Other HI-LIFTER highlights:

Box-section single mast telescopes for low headroom.

Better visibility than dual-mast trucks.

Power-tilt mast.

70 h.p. water-cooled gas engine, torque converter.

Smooth power-flow . . . equal speeds forward and reverse . . . no clutching.

Easy power-steering.

18 m.p.h. over-the-road travel speed (with "kick-out" into 2-wheel drive).

3 SIZES — In addition to this heavy-duty "work-anywhere" HI-LIFTER, Kwik-Mix® also builds 2 low-cost Moto-Bug® fork lifts in 1,000 and 1,500-lb. capacities with multi-purpose attachments. All offer time and cost-cutting advantages you can't afford to miss! Call Kwik-Mix distributor or write us today.

Want more facts? Just mail this!

To: KWIK-MIX COMPANY, Port Washington, Wisconsin
Send us: ☐ specs. ☐ price information on HI-LIFTER

NAME_____
TITLE_____
COMPANY_____
STREET_____
CITY, STATE_____

C&E KM824

KWIK-MIX
A division of Koehring Co.

MOTO-BUG® MATERIAL-HANDLING EQUIPMENT • FORK LIFT TRUCKS • DANDIE® MIXERS • KA-MO EARTH BORING & DRILLING EQUIPMENT

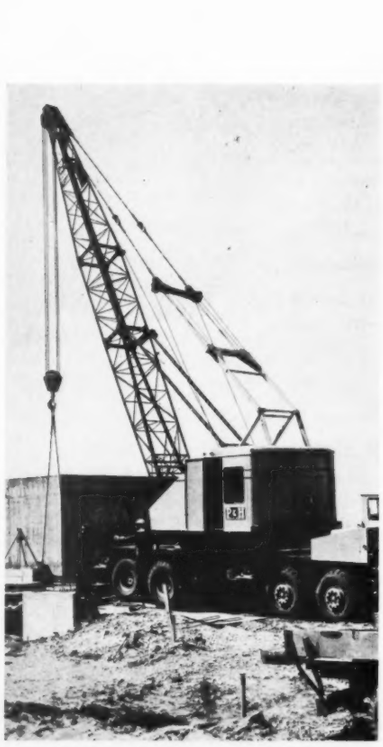
For more facts, use coupon, or Request Card at page 18 and circle No. 227

Grading was particularly difficult at Thor launching sites in the dune sand at Cooke Air Force Base near Santa Maria, Calif. This International 2T75 Payscraper is push-loaded by two tractors in the soft material during grading work.

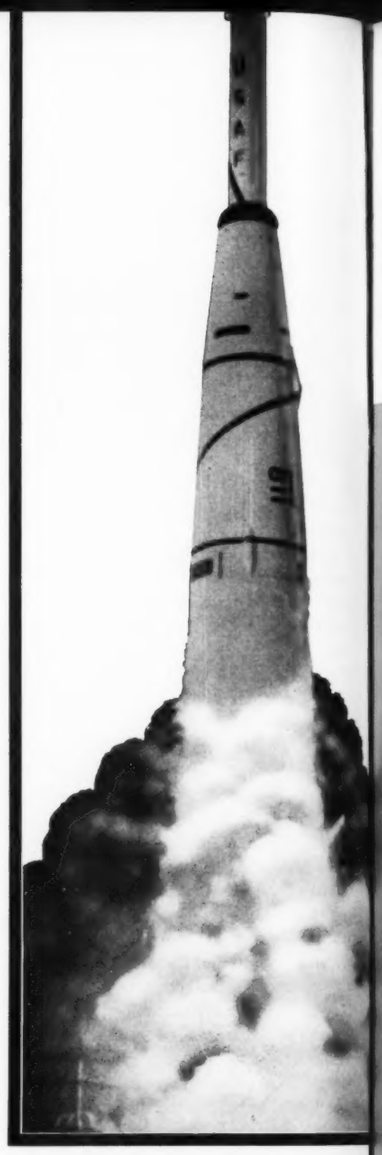
Swift construction—despite changes made necessary by new test information—marks work on the Thor facilities. The Lima placing concrete for a launching platform swings one bucket to crews while a Whiteman Champion 7-yard mixer on the Cook Bros. M-310 truck fills an empty.

The Lima uses Gar-Bro 1 and ¾-yard buckets to swing concrete into place for one of the reinforced-concrete trailer buildings that house the Thor mobile launching equipment.

The Thor flame bucket—some 20 tons lighter than the Atlas flame deflector—is positioned under the platform by a semitrailer truck. As a P&H truck crane, right, holds the bucket in position, brackets are welded into place to suspend the bucket under the platform.



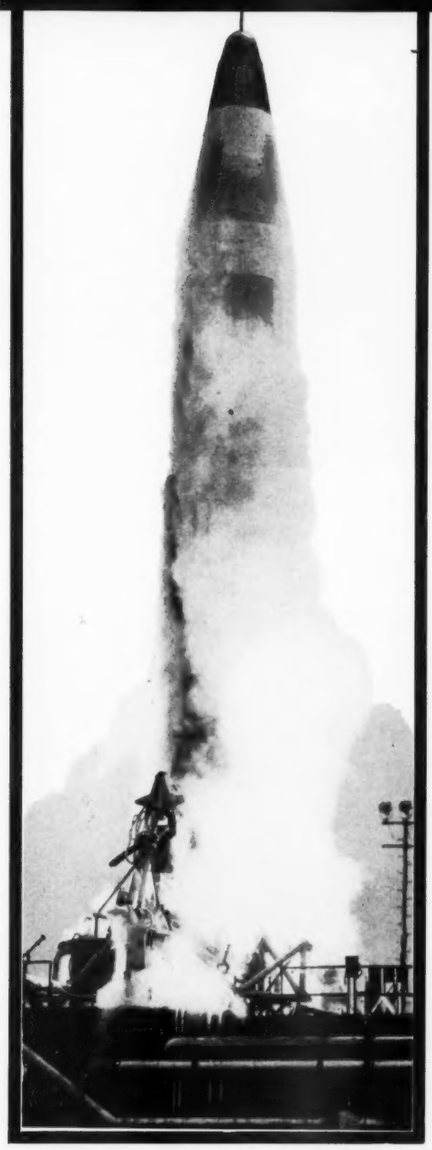
Workmen form the walls and roof of one of the trailer sh at the Thor launching site. At extreme right is the launc platform. Forms are lined with Plyform. Safway steel s support the roof.



Tight schedule, plan modifications put contractors to the test in

Buildup of THOR and ATLAS launching complexes

by RALPH MONSON
field editor



Construction of the Strategic Air Command's new West Coast missile launching base is giving a number of contractors an assortment of conventional and special construction problems. Fog, wind, drifting sand, and rattlesnakes put spice into the project, and early completion schedules and constant plan modifications demand unusual care in planning and executing the work.

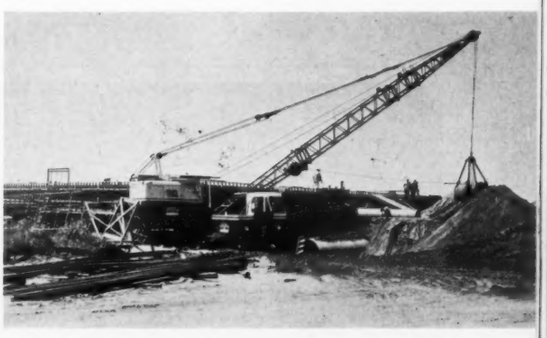
The launching facilities for Atlas ICBM and Thor IRBM missiles are being constructed under the supervision of the U. S. Army Corps of Engineers at Cooke Air Force Base near Santa Maria, Calif., formerly the Army's Camp Cooke. Remodeling of the existing World War II camp, together with the construction of some new units, will provide complete facilities for the Air Force's First Missile Division.

In another area of the 86,000-acre base, the Navy is building some of its missile launching and testing facilities. Navy personnel are expected to be quartered in the same area as the Air Force personnel.

Within the first year of operation at the base,

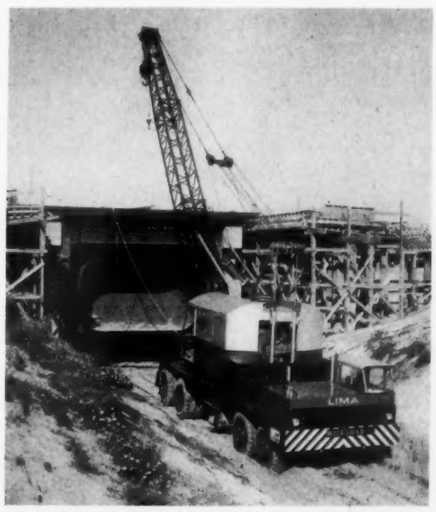
(Continued on next page)

A Cat D4 Traxcavator grades the area in front of a partially completed Atlas launching pad. The deck will rest on a heavy structural steel frame encased in concrete. Diagonal members reach down to separate footings to give the stand stability.



Excavation for culverts near the Atlas launcher service building is done by a Marion crane. Most of the two-story service building around three sides of the launcher is below ground. The gantry that sets missiles will ride rails atop the building.

House-moving dollies bring the Atlas flame bucket to the launcher site. The 50-ton bucket measures 30 feet wide and 18 feet high. The inner walls have perforations so that water can spray into the bucket as a launching takes place.



Crews complete installation of the flame bucket. Work on the service building is set up so that roof forms can be stripped and re-used while shores are left in place to support concrete.

(Continued from preceding page)

Two International 2T75 Payscrapers work well in the sand at the site of a Thor installation overlooking the Pacific Ocean. The work called for exceptional flotation in the rubber-tire equipment.

the Corps of Engineers awarded more than $34 million worth of work to 14 different prime contractors. About one-half of this construction has been completed and turned over to the Air Force. The entire program at this base is expected to cost at least $100 million.

Among the major contracts awarded during the first year were those for the missile launchers. The $9,821,400 contract for the Atlas launchers and related facilities went to a joint venture of Fredericksen & Kasler, Sacramento, Calif., and Stolte, Inc., Los Angeles. Two separate contracts for Thor facilities were awarded to Vinnell Co., Inc., Alhambra, Calif., for a total of $3,155,700.

Combine operations and training

Facilities at Cooke AFB for storing, handling, and launching the 5,000-mile-range Atlas missiles are for training and operational purposes. The facilities required for training crews in the launching of the missile are identical to those required in tactical operation.

The Thor missile has a much shorter range, and since there are no potential targets within this range of Cooke, the Thor installations are for training purposes only. Both launching areas, some five miles from the housing area of the camp, are sites overlooking the Pacific Ocean. Missile storage and assembly buildings are located in the camp area.

The Atlas launching complex consists of three launching platforms, each with its service building, a central operations building (the blockhouse), a guidance system located some distance away, and a number of support facilities. Among the latter are rocket propellant (jet fuel) storage tanks, pumping and piping facilities, a water supply tank and pumping facilities, and a power plant containing six 1,000-kva diesel-generating units. Connecting the various units are some 20 miles of 4-inch duct, carrying wiring and cables of many kinds for the operation and control of the launching.

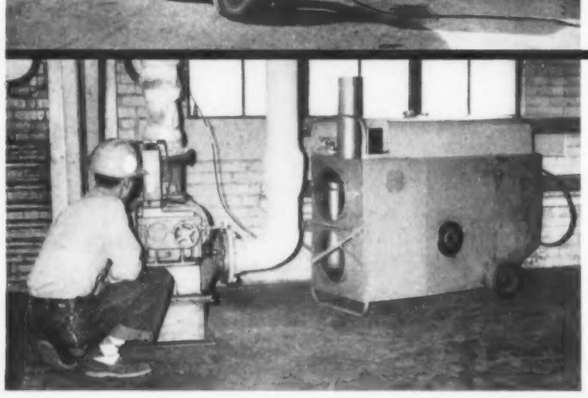
Since the Thor missile launching equipment is intended to be portable, the accompanying structural units are much lighter and simpler than those of the Atlas. The first Thor complex to be constructed at Cooke consists of two launching platforms with accompanying trailer shelters, an operations building, and facilities to supply rocket propellant and coolant water.

Vinnell's second contract for Thor launchers provides for five launching pads without a water-quenching system for the exhaust. This contract also includes two operations buildings, together with such things as necessary conduits and piping.

Roads and grading

The prime contractors on both types of launching facilities sublet the earthwork and access roads to A. J. Diani Construction Co., Santa Maria. Since a large part of the construction area was loose dune sand,

20 HERMAN NELSON "UTILITY" Portable Heaters were bought by Boyle-Ryan Construction Co. last year to keep their jobs moving through winter's worst cold. Here, the heaters are being used to maintain working temperatures for curing concrete on this Illinois highway overpass approach. Outside temperature was 30° F.



count on

HERMAN NELSON

PORTABLE AIR HEATERS

. . . everybody else does!

HERMAN NELSON "Thrifty" heaters were used day and night for curing concrete on this Maryland bridge. Contractor is Empire Construction Co., Baltimore.

IOWA POWER & LIGHT CO., West Des Moines, depends on Herman Nelson "De Luxe" heaters to protect valuable equipment and keep workmen warm.

Get Free Contractors Weather Forecast Service

AAF

AMERICAN AIR FILTER COMPANY, INC.
Portable Products Dept. 47 • Louisville 8, Ky.

Rush complete literature on portable heaters. Also send your monthly Weather Forecast Chart, at no cost.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE___ STATE_____

For more facts, use coupon, or Request Card at page 18 and circle No. 228

it was nearly impossible for wheeled vehicles to get into the area until access roads were built.

Using four scrapers, together with push-tractors and tractor-dozers, Diani built about five miles of main access road from the built-up area of the base to the Atlas launcher site. The grade was built up to a width of 36 feet with shale material from nearby borrow pits. This grade was given its final compaction with a 50-ton rubber-tire roller.

A 6-inch lift of cement-treated base was laid on the grade by the prime contractor's crews, using a Roadmixer to combine the aggregates, cement, and water. Two inches of hot-mix bituminous-concrete surfacing, laid to a width of 22 feet, completed the roadway. The bituminous mix was hauled from the S. P. Milling Co. plant in Santa Maria.

From this access road, construction roads were built to each structure site. These were surfaced with a poor grade of gravel available on the base so that they could be used by trucks and other equipment during construction. All areas where vehicles were to be operated or parked were surfaced with this gravel, since it was nearly impossible to operate a wheeled vehicle in the native sand.

Excavation for the spread footings of the Atlas launching platforms was carried down as deep as 40 feet to get bearing in the underlying shale. The scrapers and dozers also handled this excavation. A ramp was built down one side into the excavation and out the other side for the scrapers. The dozers ripped and dozed the material, pushing it out into the roadway where the scrapers picked it up and hauled it out.

When the base of the structure had been built, the area was backfilled with cement-treated soil containing five per cent cement.

Earthwork for the Thor complex consisted primarily of site grading and the construction of access roads to the several units, since these structures are founded on piles or drilled caissons. The Thor units, however, are even closer to the ocean than the Atlas site, and the problems of handling the dune sand were even more difficult.

Diani found, however, that by double push-loading the two 2T75 scrapers with two TD-24 tractors in tandem he could get big loads in a hurry. The big tires of the scrapers carried the heavy loads over the sand very well. In the daily two-shift operation, the two scrapers piled up an amazing 10,000 cubic yards of material.

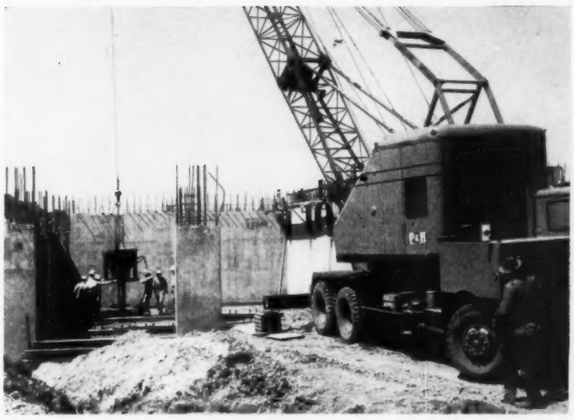
Shop-built push-blocks on the rear of the tractors made it possible to double-push with dozer-equipped tractors without danger of damaging the front tractor. These blocks, attached to the rear of the tractor frame, were shaped to receive the dozer blade. As the rear tractor contacted the block, the operator let his blade "float" so that it followed any vertical movement of the front tractor.

An existing road leading to the Thor launching area was resurfaced under a separate contract, and an overpass was built to carry this road over the Southern Pacific railroad tracks.

For compacting the roadways and parking areas, the contractor found he could obtain good results with a vibrating roller pulled by a tractor. This rig compacted the base course as well as the sand.

Diani's crews—among the first on the site—had to set their own lines and grades, and the survey parties doing this preliminary work made good use of two 4-wheel-drive Jeeps to carry them through the dunes.

(Continued on next page)



Use of two buckets to place concrete for Atlas launching facilities speeds this part of the work. The P&H crane is using a Gar-Bro ¾-yard bucket to place concrete for the floor.

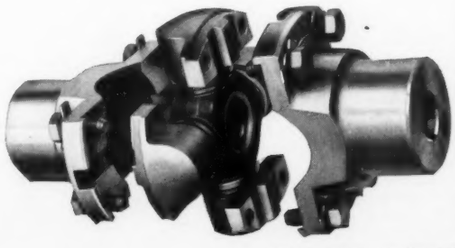
Fifteen Minute Servicing

On the Road or In the Field

Unique features of MECHANICS Roller Bearing UNIVERSAL JOINTS make them unusually easy to install and service. The complete cross and bearing assembly can be removed simply by taking out the cap screws and separating the yoke ends slightly. No flange is required for drive connections. Accurately and durably built for long, heavy service, MECHANICS Roller Bearing UNIVERSAL JOINTS are inherently balanced for smooth operation.

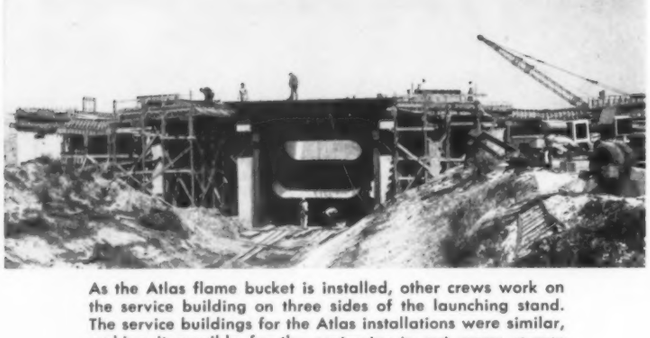
Let our engineers show you how MECHANICS close-coupled Roller Bearing UNIVERSAL JOINTS conserve space and compensate for offset shafts, in your new and improved models.

MECHANICS UNIVERSAL JOINT DIVISION
Borg-Warner • 2030 Harrison Ave., Rockford, Ill.
Export Sales: Borg-Warner International
36 So. Wabash, Chicago 3, Illinois



MECHANICS
Roller Bearing BW
UNIVERSAL JOINTS
For Cars • Trucks • Tractors • Farm Implements • Road Machinery • Aircraft • Tanks • Busses and Industrial Equipment

For more facts, use Request Card at page 18 and circle No. 229



As the Atlas flame bucket is installed, other crews work on the service building on three sides of the launching stand. The service buildings for the Atlas installations were similar, making it possible for the contractor to get many re-uses out of the forming.

(Continued from preceding page)

Atlas launchers

The structure for the Atlas launching platform is made up of structural steel members embedded in concrete. This meant that the structural steel had to be fabricated and delivered before concrete could advance beyond the footing stage. With the steel in place, the concrete was placed in conventional forms to bring the structure up to grade. The deck rests on a heavy structural steel frame.

Placing the 50-ton flame deflectors was one of the most spectacular events of the job. These huge steel buckets were fabricated by Vinnell Steel, Baldwin Park, Calif., and moved over the highways on house-moving dollies to the job site. The deflector is 30 feet wide and 18 feet high.

At the launcher site, a 60-ton truck crane raised the bucket off the dollies and held it in place while workmen welded the brackets which suspend the bucket from the launching platform. The bucket is actually a big double-walled manifold used to introduce water into the deflected rocket blast. The inner walls are perforated with many small holes to create a deluge spray. Water enters the manifold through pipe connections in the outer wall.

When the rocket is about to be fired, a battery of six big pumps powered by Waukesha diesel engines goes into action in a nearby pumphouse to deliver water from a 250,000-gallon storage tank to the flame deflector. The pumping equipment can supply up to 25,000 gpm. The discharge from the deflector flows through a prepared channel to a natural drainage outlet.

Surrounding three sides of the launching platform is a two-story service building with its top level with the launching platform. The big gantry that sets the Atlas missile in place on the launching stand rides on rails on the top of this building and is rolled away before the missile is launched. Facilities for storing and handling liquid oxygen for the rocket fuel system are housed here.

Except for its extremely heavy roof, which has a maximum thickness of 2 feet, the service building is of relatively conventional reinforced-concrete construction. It is completely separated from the launching platform to minimize vibration as a rocket is launched. Since there were three practically identical structures to be built under this contract, the contractor re-used the forms as much as possible.

To speed the stripping time—and the re-use cycle—Fredericksen, Kasler & Stolte devised a forming and shoring system that could be partially stripped, leaving shores to support the roof slab. The 4×6 timber shores, extending all the way from the floor to the underside of the roof form, were set at 6-foot centers. Each shore was capped with a 1-foot-square piece of ¾-inch Plyform which fitted into the form deck.

Attached to the sides of the posts were 2×10 ledgers, which supported 2×6 joists on which the remainder of the ¾-inch deck was laid.

Three days after the concrete decks were placed, the forms were stripped and the shores left in place to support the slab during the remainder of the curing period. This method usually permitted a continuous setting, pouring, stripping, and

(Continued on page 45)

Where SPECIFICATIONS call for . . .

HIGH DEGREE SOIL COMPACTION

BARCO RAMMERS are THE ANSWER!

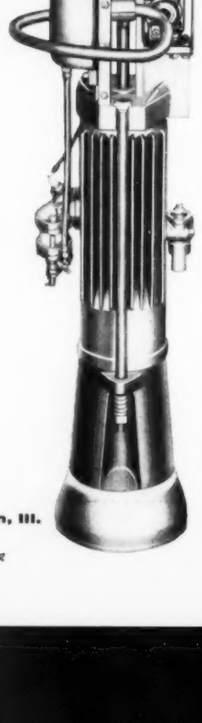
YOU can't get *high degree* SOIL COMPACTION by "patting it" or "shaking it." For deep, penetrating force to produce 95%, 97.5%, or even 100% compaction, Barco Rammers are THE ANSWER. For many soil conditions, they are the only answer.

THE KEY TO BETTER CONSTRUCTION—High degree soil compaction is worth every cent it costs. Barco Rammers are especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches—on all kinds of construction jobs: Toll Roads, Freeways, and Highways; Air and Missile Bases, Hydro-electric Power and Flood Control Dams, Bridges, Buildings, and Housing Developments.

ONE MAN OPERATION—On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On 18″ trench backfill, using lifts up to 24″, the rate is 360 to 600 feet per hour.

ASK FOR A DEMONSTRATION—We will be glad to arrange a demonstration for you; see our nearest distributor or write. SEND FOR A COPY OF CATALOG 621.

Sold and Serviced by the Nation's Leading Distributors



PRODUCTS BACKED BY EXPERIENCE
BARCO
FOUNDED 1908

BARCO MANUFACTURING CO.
BARCO RAMMER
for High Degree Soil Compaction

518M North Hough St., Barrington, Ill.
BARCO VIBRA-TAMP
for Granular Fill and Bituminous Surfacing

For more facts, use Request Card at page 18 and circle No. 230

News about Allis-Chalmers construction machinery . . .

Tractor power helps build Navajo Dam...40 stories high

Morrison-Knudsen Company, Inc. is sponsoring contractor on the Navajo Dam job in a joint venture with Henry J. Kaiser Company and F & S Contracting Company

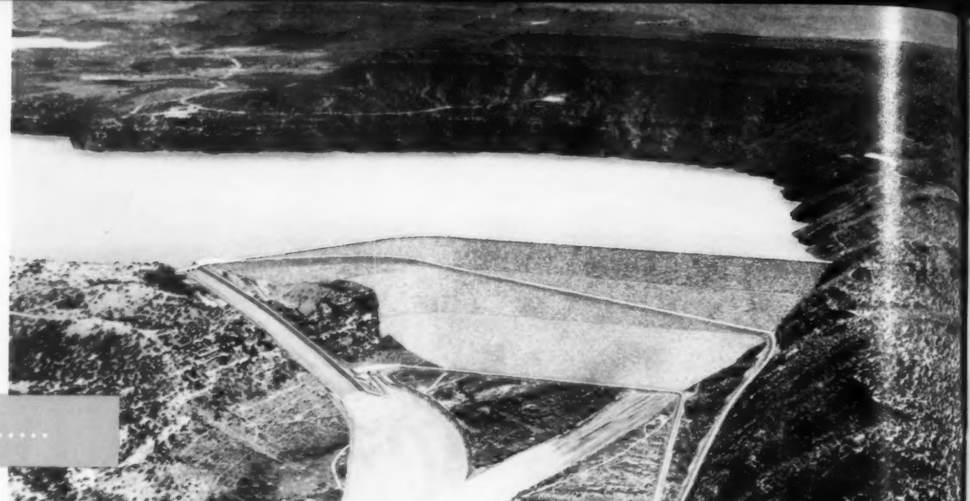
Right now, the dam you see here exists only in the minds of its builders. Spanning a sun-baked canyon in New Mexico, it will create a lake 37 miles long . . . enough water to irrigate many thousands of thirsty acres. But towering Navajo Dam, one of the world's largest earth-fill structures, will take four more years to complete. Sponsoring contractor is world-famous Morrison-Knudsen . . . already moving the first of 26 million yards of dirt and rock that will test tractor performance and dependability as severely as any job can. M-K's choice — big Allis-Chalmers crawlers with turbocharged diesel power, hydraulic torque converter drive, and the toughest track ever made. Allis-Chalmers, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

Construction Machinery Division • Engine-Material Handling Division • Farm Equipment Division • General Products Division • Industrial Equipment Division • Nuclear Power Division • Power Equipment Division • Allis-Chalmers International

POWER FOR A GROWING WORLD

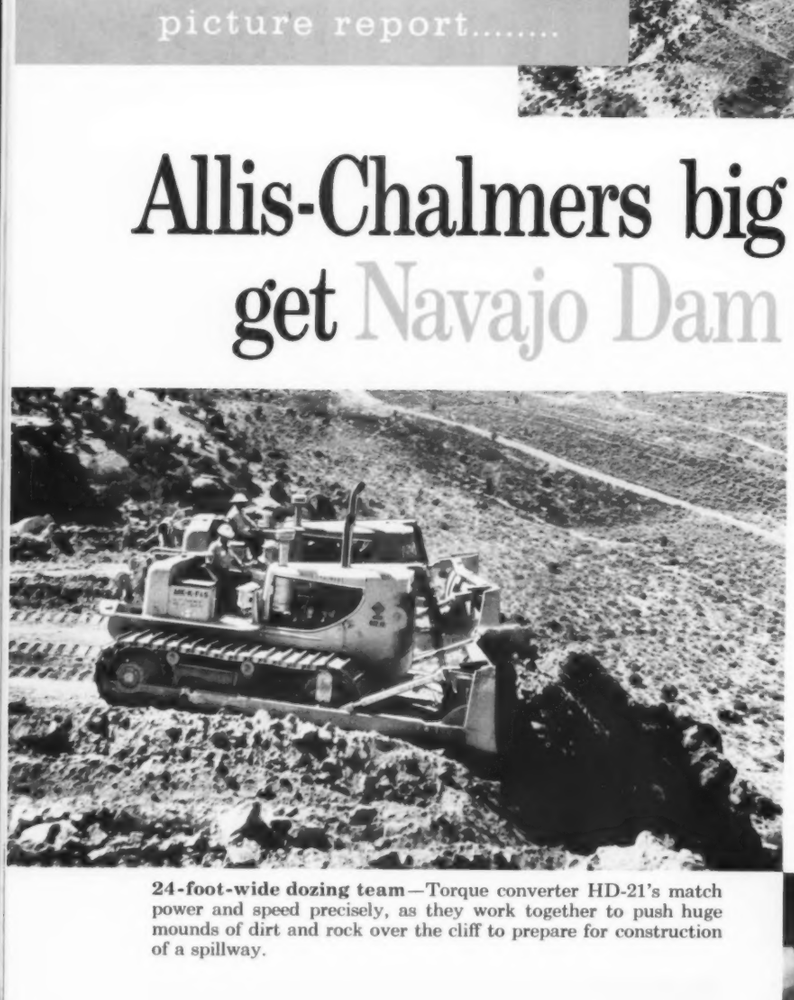
OVER



How it will look—The finished dam will be 3800 feet wide, 3200 feet thick at its base . . . and will create the biggest body of water in New Mexico.

picture report.....

Allis-Chalmers big HD-21's get Navajo Dam under way



24-foot-wide dozing team—Torque converter HD-21's match power and speed precisely, as they work together to push huge mounds of dirt and rock over the cliff to prepare for construction of a spillway.

No worries about river work—Positive-seal protection of vital track parts lets the HD-21's doze rock from the river bottom to form approaches for a temporary bridge without fear of lubricant loss or track damage.

Heavy-duty power for heavy-duty haul roads—Big Allis-Chalmers Forty Five motor graders fit the Navajo job to a "T." Clean, uncluttered design lets operator see both ends of the mold-board easily as it cuts a ditch along a haul road.

Four plus yards at a crack—This Allis-Chalmers HD-21G, biggest tractor shovel available anywhere, is helping to load about 40,000 yards of rock and dirt to clear the way for construction of a diversion tunnel.

See for yourself why Allis-Chalmers equipment was chosen for the Navajo Dam job. Your Allis-Chalmers dealer will demonstrate machines to fit your requirements . . . on your job—no obligation. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS ***POWER*** **FOR A GROWING WORLD**

◁ OVER

MS-1317

Litho in U.S.A.

(Continued from page 42)

re-use cycle with little or no waste time.

The 16,000 cubic yards of concrete required for the several structures in the F,K&S contract were supplied by S. P. Milling Co., Santa Maria, from a batch plant set up on the base. The concrete was delivered in transit mixers and placed by cranes using ¾ and 1-yard buckets.

The two-story operations building, or blockhouse, is a massive reinforced-concrete structure built partly underground and covered with earth. Conduits encased in concrete or in tunnels carry the many cables from each of the launching stands to the operations building. During an actual firing, the crews inside the operations building observe the fueling and other preparatory operations through remote television cameras. It is here that the "count down" and actual firing take place. This contract called for some 100,000 feet of 4-inch duct to be encased in concrete, and construction of nearly 25,000 feet of 8 and 10-inch water line and many thousands of feet of other types and sizes of conduits.

Thor launching complex

Although the structures are lighter and smaller for the Thor launching complex, the launching platforms—as first constructed—were almost as complicated as those for the Atlas. Drilled caissons with bell bottoms in the underlying shale support the structures. The 30-inch-diameter holes were drilled with a bucket-type drill to depths as great as 30 feet. The bottoms were belled out by hand to diameters of from 5 to 10 feet.

Reinforcing cages were placed in the holes, which were filled with concrete to create the supporting columns. Ten of these columns support a launching platform.

Each platform rests on a structural steel frame, from which a flame deflector is suspended. These deflectors, weighing about 30 tons, were delivered on large semitrailer trucks and set by a 50-ton truck crane.

Other structures in the Thor complex include trailer shelters, revetments, and crane rail supports at the two launching sites, plus an operations building and connecting conduit trenches. The trailer shelters are reinforced-concrete buildings with large doors facing away from the launching platforms. They are intended to house the mobile launching equipment of the Thor setup.

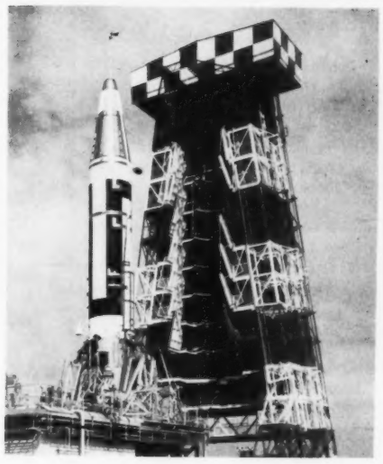
These structures were formed with ⅝-inch Plyform treated with water seal. Wall forms were backed with 2×4 studs and double 2×6 wales. Roof forming was similar and shored with adjustable steel shores. Ready-mix concrete was supplied by S. P. Milling Co. from the plant on the base and was placed by Lima and P&H truck cranes using Gar-Bro ¾-yard buckets.

The revetments are unusual structures resembling big concrete boxes 6 feet wide, 15 feet high, and 15 to 30 feet long. However, the wall facing toward the launching platform is completely free of the end walls of the box, and the interior is filled with sand.

The operations building for this setup is a one-story structure with 14-inch-thick concrete walls, and with roof and blast-resistant entrances. It was formed and poured in a conventional manner.

A second Thor complex built under a contract awarded some months later than the first is quite different. The so-called "dry" launching platform is essentially a 3-foot-thick concrete slab at ground level with steel H-piles driven into the shale for support. Five of these platforms, which are much simpler in construction, are being built under the second contract, together with such facilities as two operations buildings,

(Continued on next page)



Actual launching operations for an Atlas—still in the future for Cooke Air Force Base—near their climax at Cape Canaveral, Fla., as the gantry tower is rolled away and the intercontinental ballistic missile stands clear on its pad.

Want an easy-to-install drainage structure?

use Corrugated Metal

You don't need expensive handling or lifting equipment to install a Corrugated Metal Pipe Structure. The pipe comes in long lengths ready to lay, and since it is light and easy to handle, requires less time to install. For example, three men can properly install a 20′ length of Corrugated Metal Pipe in a matter of minutes. Corrugated Metal Drainage Products made from USS Galvanized Steel Culvert Sheets do not require "kid glove" handling. If dropped, they will not crack or spall. There are no losses due to breakage. Consequently, it is only necessary to order the lengths required to complete the job.

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

Write for our free booklet "USS Culvert Sheets" which tells you how to get the kind of service you can expect from Metal Drainage Structures made from USS Galvanized Steel Culvert Sheets. It's loaded with information about selection of correct structure sizes, preparing foundations and installation procedure. For your free copy, write to United States Steel Corporation, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

USS is a registered trademark

Equipment on this job

Constructing missile launchers:
- A Lima 60-ton truck crane
- P&H and Marion truck cranes with Gar-Bro 1 and ¾-yard buckets
- A P&H 50-ton truck crane
- Cook Bros. trucks with Challenger and Whiteman Champion 6½ and 7-yard mixers
- A Calweld bucket-type drill
- Orangeburg duct
- Plyform deck forming treated with Thompson water seal
- Neptune hardware
- Safway adjustable steel shores
- A Cat D4 Traxcavator
- A Cat No. 12 motor grader

Grading and access road work:
- Two International 2T75 Payscrapers
- Two LeTourneau Super C scrapers
- International TD-24 push-tractors
- International TD-18 tractor-dozers
- A Ferguson 50-ton rubber-tire roller
- A Pettibone Wood Roadmixer
- A Barber-Greene finisher
- A Cedarapids bituminous paver
- An Essick vibrating roller
- An International TD-6 tractor
- Two 4-wheel-drive Jeeps

trailer shelters, and revetments. Vinnell's contracts also include grading and surfacing of roads and parking areas, construction of a water storage tank and distribution system, plus other supporting facilities.

Other work

The contracts for each type of missile-launching setup include the construction of steel frame buildings in the built-up camp area for the assembly and storage of the missiles as they are delivered to the base. Delivery will be made by truck or air. A new 8,000-foot runway is being built under a separate contract by Fredericksen, Kasler & Stolte to accommodate the big transport planes which will make the deliveries.

Under a number of separate contracts, the World War II facilities on the base are being completely remodeled and some new units are being constructed. Among these are three large dining halls and an 880-unit Capehart housing project for families.

Many things influenced the speed of the work though there were no appreciable delays or setbacks. The weather was generally favorable, and although there were foggy, windy days with some severe blowing sand, the crews lost only four or five days during the entire construction period.

Perhaps the biggest effect on the job was felt as plans were modified during construction work. These missiles are still in the testing stage, and new data is constantly being acquired through the testing and study program. New information is evaluated and, during this work, some of it pointed to desirable modifications in the launching facilities. Both of the prime contractors on this part of the job kept their schedules fluid and incorporated the changes as rapidly as possible so that work already accomplished did not have to be undone.

Personnel

To handle the construction activities at Cooke Air Force Base, the Los Angeles District of the U. S. Army Corps of Engineers set up a Western Area Office at the base with Lt. Col. Allen W. Sanders, Jr., in charge. Others on the staff are assistant area engineer J. W. "Jim" Hamilton, and project engineer on the launching facilities Bruce W. Bennett.

For the joint venture of Fredericksen, Kasler & Stolte, Inc., Jack Kasler is project manager, Frank Muren is general superintendent, Roger Griffin is structural superintendent, Bernie Heithkamp is carpenter superintendent, Morgan Jones is labor superintendent, and R. M. "Rus" Pinching is project engineer.

Supervising the two contracts for Vinnell Co., Inc., is a staff headed by project manager C. P. Critcher, and including superintendent Schyler Walker and assistant superintendents Gordon Horne and J. E. Thompson.

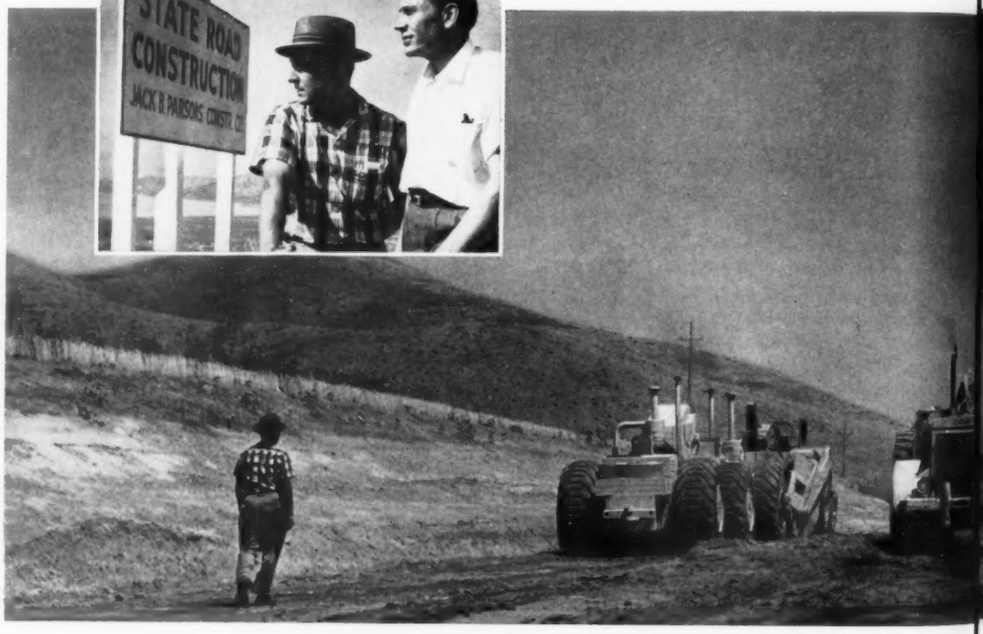
Although the supervision of construction is being handled by the Corps of Engineers, most of the facilities were designed by private engineering and architectural firms. The Atlas facilities were designed by Holmes & Narver, Inc., Los Angeles. Plans for the Thor launching facilities were prepared by Daniel, Mann, Johnson & Mendenhall, Los Angeles.

Other contractors and other architectural and engineering firms are participating in other phases of the work at Cooke Air Force Base. A large number of subcontractors also played important roles in the rapid construction of these important missile facilities. THE END

Worthington adopts new massive "W" trademark

The Worthington Corp., Harrison, N. J., has adopted a new trademark to replace its 73-year-old winged Egyptian scarab symbol. A massive "W", said to be 75 per cent more visible, will now identify the products of the firm, which makes pumps, air compressors, and other construction machinery.

Many planning sessions such as this one, between Jack Parson (left) and Glen Foulger, the C.I.T. field representative, caused Mr. Parson to comment, "C.I.T. people are familiar with the equipment costwise . . . know what it can do and the problems contractors are up against."



Parson Construction Company...

Rocky Mountain

...C.I.T. is on the job, too

High in the Wasatch range of the Rockies, 90 miles north of Salt Lake City, the Jack B. Parson Construction Company of Smithfield, Utah, is straightening and widening a 10 mile segment for the new Interstate Route 82S. The Parson bids captured *both* the first and second contracts for the job. A giant million and a half dollar fleet of Parson equipment is moving millions of yards of rock, earth fill, bituminous plant mix and road gravel. C.I.T. Corporation helped finance over $500,000 worth of this profit-making equipment. This highly mechanized operation, needing only 10 hard laborers and 45 equipment operators, has kept the Parson Construction Company comfortably ahead of schedule on this job.

No stranger to this territory, the Parson company has handled airports, road and reclamation projects throughout the Western states. Jobs of this nature require a resourceful financing connection. As Mr. Jack B. Parson, owner of the company says, "By having

C.I.T. CORPORATION • MACHINERY AND EQUIPMENT

ATLANTA • BOSTON • CHICAGO • CLEVELAND • DALLAS • DENVER • DETROIT • HOUSTON • JACKSONVILLE
NEW YORK • PHILADELPHIA • PORTLAND • SAN FRANCISCO • SEATTLE • CANADA

Avoid legal pitfalls

Bid deposit requirement

THE PROBLEM: *A New Jersey statute read: "No municipality shall . . . contract for . . . any work . . . or for the furnishing of any materials, supplies, or labor . . . where the sum to be expended exceeds . . . $1,000 . . . unless the governing body shall first . . . advertise for bids therefor, and shall award the contract to the lowest responsible bidder." (In 1957 the law was so amended as to apply only to contracts involving more than $2,500.) The law did not require that bids be secured by check or deposit, but bidding specifications on a township job provided that a certified check for not less than 10 per cent of the amount of the bid, payable to the township, must accompany each proposal. Defendant's bid was lowest, but was not accompanied by a check, and he refused to enter a contract when the bid was accepted. He justified the refusal on the ground that his bid was not legally accepted because he had not filed a certified check. The township sued him for the increased cost of the work on the contract being awarded to the next lowest bidder. Was the suit properly dismissed?*

THE ANSWER: Yes. The township had no right to accept defendant's bid. (Town of Hillside v. Sternin, 136 Atl. 2d 265, decided by the New Jersey Supreme Court.)

As noted by the court, this is apparently the first instance in which an appellate court has been called upon to decide whether a bidder is bound where his proposal has been accepted in disregard of the bidding specification that security accompany the proposal.

Had there been a statute requiring that a check accompany the bid, a theory that public authorities cannot waive noncompliance and thereby bind the bidder, the position taken by the court would have been somewhat stronger. But the court said the statutory requirement that a contract be awarded to the lowest "responsible" bidder implied power, if not duty, to require bids to be accompanied by check or deposit. Furthermore, it would be unfair to other bidders who had complied with the requirement, and against the public interest, to permit waiver as to the lowest bidder.

It was virtually conceded that a taxpayer or competing bidder could have successfully challenged award of contract to defendant—at least before signing and posting of bond for performance of the contract. So it was argued by the township that defendant should not be permitted to take advantage of his own neglect to deposit a check. The court rejected this argument on the ground that, although "minor or inconsequential variances and technical omissions" might be waived, it would be unfair and against public policy to permit waiver of the bidding requirement that a certified check be deposited.

Typographical error

THE PROBLEM: *Materialmen notified a government contractor that they had furnished "60,142 tons" of rock to the contractor. That figure was a typographical error. It should have read "6,014.2 tons". Did the mistake invalidate the notice, thereby releasing the contractor's surety from liability for money due for the rock furnished?*

THE ANSWER: No. (United States v. Peerless Casualty Co., 255 Fed. 2d 138, decided by the United States Court of Appeals, Eighth Circuit.)

Highway contractor had extra responsibility

THE PROBLEM: *The state of California let a contract for repaving a road, retaining to itself the resurfacing of the shoulders. The repaving was completed and the contracting firm moved its men and equipment away. The supervising engineer inspected the job and expressed his satisfaction with it. But before the work was formally accepted, an automobile struck a drop-off at a point where the shoulder had not been reconstructed. The motorist was killed. The contract provided that the contractor should be responsible for any damages resulting from "defects or obstruction or from any cause whatsoever during the progress of the work or at any time before its completion and final acceptance." Was suit against the contractor for death of the motorist improperly dismissed by the trial judge?*

THE ANSWER: Yes. (Breslin v. Fredrickson, 313 Pac. 2d 597, decided by the California District Court of Appeal, Third District.)

In ordering a new trial, the court

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Road Straightener

ing a firm such as C.I.T. to work with you to help purchase the right equipment, you keep other lines of credit open for payrolls and purchasing materials."

How Job-Engineered Finance Plans Help Contractors

Payd Plan equipment financing terms to 6 years with payment schedules related to depreciation, or equal monthly payments over 36 months, or skip-payment plans where needed . . . these are just a few of the helpful financing tools offered by C.I.T. Corporation.

In addition to equipment purchase financing, C.I.T. can help improve contractors' bid and bond capacity, meet current operating expenses or other business needs by arranging capital loans. C.I.T. representatives know how to lay out "job-engineered" finance plans, carefully devised to fit the needs. Why not call or write? No obligation, of course.

EQUIPMENT FINANCING

JACKSONVILLE • KANSAS CITY • LOS ANGELES • MEMPHIS
CANADA: CANADIAN ACCEPTANCE CORPORATION LIMITED

CIT CORPORATION

For more facts, use Request Card at page 18 and circle No. 232

avoid legal pitfalls

said that a jury should be permitted to decide whether the drop-off from the pavement was a "defect" against which the contractor should have erected a warning sign or barricade, because of the contract assumption of responsibility until acceptance of the work or other release of the contractor from responsibility.

Engineering plans are not "goods"

THE PROBLEM: *Architects and engineers had offices in Norfolk and Washington where drawings, plans, and specifications were prepared for use in the construction of facilities for interstate commerce. Interstate travel by their employees and interstate communications were involved. Did the federal wage and hour laws apply to the employees?*

THE ANSWER: No. (Mitchell v. Lublin, McGaughy & Associates, 250 Fed. 2d 253, decided by the United States Court of Appeals, Fourth Circuit.)

The court reasoned: the employees could not be regarded as producing "goods" designed for interstate commerce. The localized work of preparing plans, etc., at the firm's offices was not converted into interstate commerce because of use of the mails and necessary travel of employees.

The court distinguished the status of employees who have more intimate connection with the construction of interstate commerce facilities. The wage and hour law covers not only workers directly engaged in construction of such facilities, but also those who do such paper work as preparing material lists and payrolls, field men, and timekeepers.

Equipment-rental angles

THE PROBLEM: *A subcontractor's bid for concrete placement did not call for furnishing of necessary equipment and was not accepted. A later bid at $21,000 higher than the first bid did call for furnishing the equipment and was accepted. The subcontractor rented the equipment from a third party for $20,000, and later claimed that the general contractor's representative who signed the subcontract, told him the $20,000 expenditure would be regarded as an extra. The claim was not corroborated. Was the subcontractor entitled to collect $20,000 as an extra?*

THE ANSWER: No. (Williams Tilt-Up Contractors, Inc., v. Schmid, 326 Pac. 2d 41, decided by the Washington Supreme Court.)

Other points were decided in the same case. A provision in a subcontract, that claims for extras must be presented within one week, was waived as to a claim for overtime if the general contractor specifically agreed to pay it. Also, if an agreement by an equipment owner to rent equipment did not specify the time during which the rental was to continue, the owner could terminate it any time by demand for possession.

Defective passageways

THE PROBLEM: *A building contractor erected a temporary wood causeway, in an abutting street, for pedestrian use. Plaintiff was awarded damages against the owner and the contractor jointly for injury sustained when she tripped over a protruding nail in the flooring of the causeway. Was the owner entitled to require the contractor to bear the entire damages?*

THE ANSWER: Yes. (Koonz v. Mechanics and Farmers Bank of Albany, 168 N. Y. Supp. 2d 369, decided by the New York Supreme Court, Trial Term, Albany County.)

The court said the fact that New York law made the owner jointly liable with the contractor, regardless of fault of the owner, did not prevent the owner from requiring the contractor to bear loss for which the latter was wholly to blame.

State budget law

THE PROBLEM: *The Arizona State Highway Commission awarded a construction contract at almost $2 million. The contract specified that if the work should cost more than the budgeted funds, it should be delayed until funds were legally available. The contract also provided:*

"In the event that no funds are appropriated or budgeted for this project for the succeeding fiscal year, then this contract shall be null and void, except as to that portion for which funds have now been appropriated and budgeted therefor, and no right of action or damages shall accrue to the benefit of the parties hereto as to that portion of the contract that may so become null and void."

There was only $1,325,000 avail-

Austin-Western 6-wheel grader gives Buffalo contractor 5 years' rugged service... maintenance cost only $300!

"We rely on Austin-Western for rugged, dependable performance. It's one tandem grader that has the guts and power to handle any tough assignment the construction business can throw at it." That's what George Sheperd, general manager of Bruner Asphalt and Construction, Inc., Buffalo, N.Y., has to say about Austin-Western graders.

No downtime

"We just don't have maintenance problems and expensive downtime with our Austin-Western equipment. Aside from routine service requirements, it is hardly ever in the shop. We receive excellent cooperation from the A-W distributor on the rare occasions when we do require parts or service.

"In construction, perhaps more than any other business, time means money. That's why the A-W's ability to tackle even the heaviest of jobs and do them faster is so important to us. Of course, the fact that we can always depend on the A-W to stay on the job and help maintain project schedules is equally important.

able for the first fiscal year, and the state auditor refused to recognize that the contract encumbered the fund or to approve the contractor's claim for $15,723.90, on the ground that the contract was wholly void. Did that position involve a correct interpretation of the Arizona state budget law?

THE ANSWER: No. (Duff v. Jordan, 311 Pac. 2d 829, decided by the Arizona Supreme Court.)

The court rejected argument that an available fund could not be encumbered for less than the entire ultimate cost of the project.

Bulldozer accident

THE PROBLEM: *Defendant contracted to grade a new street through property owned by plaintiff and another person. While the operator was pushing felled saplings and brush along the site, a sapling flew to one side, injuring plaintiff who was standing nearby but off the site. Were the defendant and the operator liable to plaintiff for his resulting injury?*

THE ANSWER: No. (Griffin v. Blankenship, 102 S.E. 2d 454, decided by the North Carolina Supreme Court.)

The court said that the operator could not have foreseen that such an accident would be apt to happen.

Extortion by union agent

THE PROBLEM: *Two corporations specialized in setting stone in construction projects in New York. Much of the work consisted in installing granite blocks in bridges and highways. The blocks were usually ordered from out-of-state quarries and cut to specified dimensions. Under unjustifiable pressure of threatened work stoppage, the companies paid off a union business agent. Was he guilty of interfering with interstate commerce by wrongful use of threatened force or fear?*

THE ANSWER: Yes. (United States v. Palmiotti, 254 Fed. 2d 491, decided by the United States Court of Appeals, Second Circuit, affirming conviction by the United States District Court, Southern District of New York.)

Defendant did not admit he had received any money until F. B. I. photographs showing that fact were offered in evidence at the trial. He then unsuccessfully claimed that the money was received as a gift, which he did not decline through fear of offending the giver.

Debtor's check as payment

THE PROBLEM: *After a building job was completed, the owner and the contractor could not agree on the amount due the latter. The owner sent a check for the amount he claimed to be due. The check bore the statement, "By endorsement this check is accepted in full payment of the following account, final." It also bore the notation, "If incorrect, please return." The contractor cashed the check, endorsing it. Did he thereby bar himself from suing to collect an additional sum?*

THE ANSWER: Yes. (Larsen v. Zimmerman, 135 Atl. 2d 270, decided by the Maine Supreme Judicial Court.)

The decision is in line with the rule of law, recognized by courts generally, that where there is a dispute between debtor and creditor as to the amount due, acceptance of such a check amounts to an agreement to accept it as final payment. In most states, however, if there is no reasonable basis for a debtor's denial that he owes the sum claimed by the creditor, acceptance of a check for a smaller sum does not constitute a binding agreement for final payment, despite notations on the check to the above stated effect. In Maine, there is a statute which makes the check final, whether there is a dispute or not.

Workmen's compensation

THE PROBLEM: *Contractor and employee lived in New Jersey. Contractor undertook a building job in Philadelphia, and in New Jersey sublet installation of a cornice. Defendant agreed to erect a scaffold for the use of the subcontractor's employees. Plaintiff fell from the scaffold. Defendant's liability under Pennsylvania workmen's compensation law was insured. The subcontractor's liability was insured under New Jersey law, and plaintiff collected benefits under that law. Could he then sue the contractor for damages in New Jersey, on the theory of negligent failure to provide him with a safe place to work?*

THE ANSWER: No. (Wilson v. Faull, 141 Atl. 2d 768, decided by the New Jersey Supreme Court.)

In effect, that court decided that whether the injury was covered by the workmen's compensation law of one state or the other, no suit for damages was permissible.

Powerful 6-wheel Austin-Western tandem grader prepares bedrock surface for construction of a cloverleaf, part of the giant New York thruway project. Rear wheels are offset to compensate for sidethrust of fully loaded blade.

"A man can do a better job when he likes his machine. A satisfied operator and a top-performance grader make an unbeatable combination. Our operator likes the A-W. He says it is comfortable to operate, and so easy to maneuver that even in reverse he can get right in between 12-ft. forms.

Four main reasons

"All-wheel drive . . . all-wheel steering . . . hydraulic controls . . . torque converter—I'd say those are the four main reasons why we're sold on Austin-Western. They combine to deliver power, traction, maneuverability and precision control!"

Investigate. Learn now why contractors the world over are choosing Austin-Western for the really tough construction jobs. The versatile, hard-working A-W is available in 6-wheel and 4-wheel models with a wide choice of power plants. Torque converter optional. Contact your nearby Austin-Western distributor or write us.

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Request Card at page 18 and circle No. 233

Floor slab work for the main buildings of Western Electric's plant in Omaha, Nebr., resembles runway paving. Concrete for the 20-foot lane is first struck off by a screed pulled by the transit-mix truck.

After the screed is pushed back by hand, sections of wire mesh are placed over the concrete, about 1 inch below the finished surface. Alternate lanes are paved first, then remaining lanes filled in. Finished lanes in the background have been covered with Glas-Kraft curing paper.

Paving technique used to lay floor slab for big plant buildings

Alternate paving of 20-foot lanes is used for 32 acres of floor; crews place up to 22,000 square feet of concrete daily

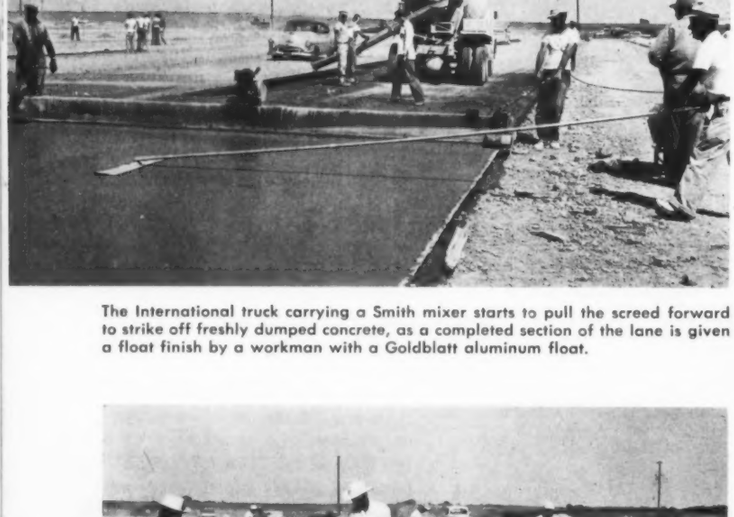
by **BILL ALLEN**
field editor

To meet the tight construction schedule of Western Electric Co.'s $30 million Omaha plant, the contractor used an unusual method to speed the pouring of 32 acres of floor slab in the two main buildings.

Concrete was poured in alternate 20-foot lanes for the length of the buildings in an operation resembling an airfield paving job. Transit-mix trucks from the contractor's batch plant rolled in between the forms to place up to 22,000 square feet of the 6-inch reinforced concrete per day.

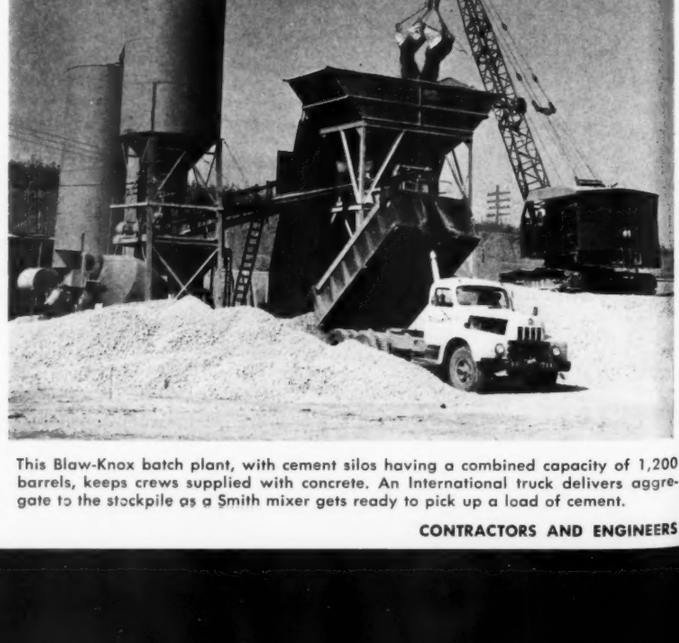
The contractor responsible for this phase of the work, Olson Construction Co., Lincoln, Nebr. had no columns in the way to obstruct the forming and the pouring of the concrete. The steel columns of the 1-story buildings were set later through blocked-out holes in the

(Additional photo on front cover)



The International truck carrying a Smith mixer starts to pull the screed forward to strike off freshly dumped concrete, as a completed section of the lane is given a float finish by a workman with a Goldblatt aluminum float.

A Whiteman twin troweling machine and three other Whiteman machines with 3 and 4-foot-diameter blades finish the slabs. As many as seven kept this operation moving several hundred feet behind the concrete-placing crews.



This Blaw-Knox batch plant, with cement silos having a combined capacity of 1,200 barrels, keeps crews supplied with concrete. An International truck delivers aggregate to the stockpile as a Smith mixer gets ready to pick up a load of cement.

slab. Concrete footings for the columns, however, were set in place before the slab was poured.

Plant is big

Western Electric's new plant is located about eleven miles west of downtown Omaha. About 40 acres of the 390-acre site are under roof. Facilities for manufacturing telephone equipment are located in the 680×700-foot cable building and the 1,020×915-foot crossbar building. Both, similar in design, have a 1-story steel frame with combination block and brick exterior walls. The two buildings enclose about 32 acres of 6-inch reinforced-concrete floor slab resting on compacted earth.

The 100×600-foot administration building is a reinforced-concrete structure with three floors. Wings on each end of the building lead to the two manufacturing plants. Heat for all buildings is generated in a separate boiler house, which has a brick and steel service building adjoining.

When completed in 1959, the Omaha plant will be able to produce some 24 billion conductor-feet of exchange cable for the Bell System each year. It will also turn out over 600,000 lines of No. 5 crossbar—equipment used in dial telephone exchanges. The king-sized plant will have two parking areas for over 3,000 employee cars, 4½ miles of roadways, and 1½ miles of railroad sidings. It will employ from 4,000 to 5,000 people.

Floor-slab construction

Western Contracting Corp., Sioux City, Iowa, tackled the 4-million-yard site grading job—and finished it—during the first construction season, moving up to 80,000 cubic yards per 20-hour day.

The cable building was completed for partial occupancy, the floor slab for the crossbar building was finished, and the reinforced-concrete framework of the 2-story administration building was completed the following season.

One of the most interesting features of this part of the work was the forming and pouring of the 1.5 million square feet of floor slab covered by the two main buildings. With the steelwork postponed until later, the contractor was able to roll out 20-foot-wide strips of concrete about as fast as the transit-mix trucks could deliver the material.

Working two 16-man crews on separate strips, Olson had no trouble in turning out 1,100 feet of the 20-foot-wide lanes in a 10-hour day. This is a sizable stretch of concrete, but it is only a little more than the 1,020-foot length of the crossbar building.

Before the slab for the crossbar building could be formed, underground utilities had to be installed, and block footings had to be set to support the steel columns. Backfill for all trenches was compacted from 90 to 100 per cent density by a 1,500-pound drop tamper handled by a crane. The area under the slab was

(Continued on next page)

A Quick-Way Model 85AC ½-yard backhoe digs for utility lines within the crossbar building site. The operator digs up to 600 feet of 5-foot-deep trench in a day.

160 hp L-W Adams Model 660 cuts sub-grade for R. B. Tyler Co., Jackson, Mississippi . . . takes a big bite at 4.7 mph in median strip of 4-lane U.S. 61, between Natchez and Washington. Easy power steering, dual-action brakes, and positive blade control give the operator confidence to grade at practical, time-saving speeds.

When you compare price ...compare "extras"

You get these "extras" as standard equipment on this big L-W Adams† grader

You'd expect to pay a plus price for the extra-value features that help make L-W Adams Model 660 the most productive grader built. Here are the "extras" you get on the standard 160 hp "660" *without extra cost* — in addition to what is considered standard equipment on most ordinary graders.

Power steering — hydraulically-powered steering that retains "road feel" . . . for easier steering; for fast turns out of ruts, ditches, etc.; for smooth, precise blading control; for quick turn-arounds; for over-all easier operation.

Slide-shift moldboard — shifts 26½" right or left on circle . . . for quick-change to cut high banks, to grade low backslopes, finish wide shoulders, etc.

Big tires all-around — all six tires 14.00-24, 10-ply . . . for least rolling and turning resistance; for best traction and push-power; for extra flotation in soft going.

Dual-action brakes — hydraulic brakes on all 4 tandem wheels *and* on transmission . . . for safer, easier stops on hills, highways; for fast reversing to reduce blading cycle-time; for quick maneuvering.

12-speed constant-mesh transmission — 8 forward speeds (to 26.0 mph), 4 reverse speeds (to 13.7 mph), 3 creeper speeds are optional . . . for more power-speed combinations to handle more work at full power and best speed; for less waste of production-time in traveling, and on shuttle back-up; constant-mesh for fast, no-clash gear-shifts.

Foot accelerator — in addition to regular hand throttle . . . for split-second control on variable-speed work; for faster, safer travel in traffic.

Rubber engine-mounts — 4-point engine suspension on live rubber isolates vibration and noise . . . for less annoyance and operator fatigue, for a tighter machine, for less maintenance and downtime.

Electric starting — key-turn starting . . . for positive, instant starts, even on coldest mornings.

Parking brake — mechanical brake on transmission . . . for positive holding on steepest slopes.

Full-floating rear axle — drive-axle carries no grader weight . . . for less stress, strain, and friction; for long maintenance-free life.

Optional at modest cost

- Creeper speeds (3), slow as 36' per minute (to 0.4 mph) at full power.
- POWER-*Flow*® transmission with 190 hp engine and torque converter.
- Power-shift moldboard, scarifier, Jebco Elegrader, bulldozer, snow plow and wing, cab.
- Complete line of special-purpose attachments and accessories at low "buy-anytime" prices.

Before you buy any higher-powered grader, compare its specifications and features with LeTourneau-Westinghouse Adams Model 660 . . . check the "extras" included in "660's" basic price. Call us for complete information and a demonstration to prove their worth!

†Trademark G-1569-DCJ-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 234

(Continued from preceding page)

Reinforcing steel is set in the perimeter wall of the crossbar building. The block footing in the foreground will support a section of wall and a pedestal for a steel column. In the background, the boiler house and service building are under construction.

regraded and compacted with a vibrating roller.

About 6,000 feet of 6-inch steel forms were used to form the alternate lanes that ran the length of the building. The forms contained a keyway section to make a better joint with the adjacent strip. No forms were needed in pouring the 20-foot gap between the strips.

Before concrete was poured, the area over the column footings was blocked out. With columns on 20 and 40-foot centers, the form rails cut through the middle of the 4-foot-square block-out. The square was set to minimize cracking, with two of its corners on the line of the joint and the other two corners in adjacent slabs.

Slab pours

After the dry ground in front of a pour was hosed down by hand with water from a tank truck riding outside the forms, truck mixers backed between the form rails to chute 6-yard loads of concrete onto the compacted earth. The trucks, using a cable, then pulled along a contractor-built vibrating screed that rode the rails, striking off the concrete.

As this was done, a 6×6 mesh of No. 4 wire was placed between the forms by hand and walked down so that it was about 1 inch below the surface of the finished slab. Protruding keyways on the forms controlled the depth to which the mesh was placed.

Additional concrete was then placed over the mesh, and the vibrating screed was pulled along by hand to bring the slab to full depth.

Equipment and materials used

- Quick-Way Model 85AC ½-yard backhoe
- Schield Bantam crane with 1,500-pound drop tamper
- A Vibro-Plus vibrating roller
- Smith mixers on International trucks
- A shop-built vibratory screed powered by a Stow gasoline-engine-driven vibrator
- Goldblatt aluminum floats
- Whiteman trowels
- Glas-Kraft paper mats reinforced with spun-glass ribbing
- Concut and Clipper saws
- A Blaw-Knox batch plant
- Ash Grove cement

The contractor-built vibrating screed proved very satisfactory. Of box-type construction, its 1-foot-high sides were built of lightweight magnesium plate, and its top and bottom were joined with 3½-inch steel channels. An additional steel channel at the base provided the working surface on the concrete. The screed was light in weight, strong, and held its shape well. Power was provided by a gasoline-engine-driven vibrator mounted at the center of the span. Steel rollers, fixed to the ends of the screed, rode the forms.

Working just behind the screed were two men with aluminum floats. Several hundred feet behind the pour was a crew of about eight finishers. Sometimes as many as seven troweling machines were in use as the men put the finishing touches to the fresh concrete.

The concrete was covered with paper mats reinforced with a spun-glass ribbing. The 20-foot-wide mats could be used twice before being discarded. Contraction joints were sawed at 40-foot intervals.

Batch plant

The batch plant supplying concrete for the entire project was set up at the north edge of the site by the subcontractor, Crouse Ready Mix Co., Audubon, Iowa. Operated by

SUPERIOR
Heavy-Duty SCREED SUPPORTS

Pat. Applied For

For Use with 1¼" and 1½" I.D. Pipe Screeds and Vibratory Screeding Equipment

ADJUSTABLE SCREED HOLDER

Consists of a 1" threaded rod to which is welded a cradle to hold the pipe screed. This cradle is slotted as shown so that the arms may be bent over to secure the 1¼" or 1½" I.D. pipe screed. Threaded onto the rods is a half nut which provides the adjustment.

Especially Designed for Use on Bridges, Underpasses and Overpasses

These Screed Supports are designed to take the heavy loads imposed by traveling vibrating screeding equipment. The Bases for the screed holders are of two types: (1) The Metal Base for use on structural steel members; (2) the Chair-Type Base for use on a plywood deck.

On Structural Steel: As shown above, the Metal Base is tack-welded to the top flange on approximately four foot centers. The Screed Holder is set into the base, and adjusted to height by turning the nut. The threads are fast, three to the inch, and of a contour type, non-clogging and easily cleaned.

On Wood or Plywood Decks: The Chair Base is set on the deck at approximately four foot centers. It is easily secured to the deck by nailing across the upturned legs. If desired, legs can be supplied of galvanized wire. The Chair Base with holder is shown below.

PERFORMANCE

Superior's Heavy-Duty Adjustable Screed Supports have been used on turnpike structures and other projects. Results in the field indicate that this method of supporting screeds provides a simple answer to an otherwise expensive and complicated set up. *Write for Bulletin.*

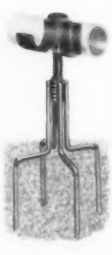
HOLDER INSERTED IN CHAIR BASE

Only the inexpensive bases are left in the concrete. The Adjustable Holders are easily removed, together with the pipe screed, because the holders are set, not screwed into the base. The nut fully covers the base opening and prevents concrete from entering.

Adjustable
Standard SUPERIOR SCREED CHAIRS

FOR FORMED SLABS 4½" AND GREATER

With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.



FOR SLABS ON FILL

With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.

SUPERIOR CONCRETE ACCESSORIES, INC.

9301 King Street, Franklin Park, Illinois

New York Office
1775 Broadway, New York 19, N. Y.

Pacific Coast Plant
2100 Williams St., San Leandro, Calif.

For more facts, use Request Card at page 18 and circle No. 235

A job-made device hurries the work of pounding stakes to the exact grade of the bottom of the forms. The 1-inch aluminum pipe tubing is placed atop a stake, and a short section of 1½-inch iron pipe is thrown down the sleeve to hit a nipple that drives the stakes. Stakes had first been set about an inch above grade by another man with a sledge. No level rod is needed; the levelman in background reads foot markings directly on the stake.

manual controls, the plant kept the ready-mix trucks supplied with up to 100 yards of concrete per hour.

The truck-mounted mixers were first charged with cement from a 400-barrel overhead silo. Wheeling under the aggregate batcher, the mixers picked up two 3-yard batches of sand mixed with 1½-inch rock. The three aggregate compartments of the overhead bin were stocked by a crane working from adjacent stockpiles. Cement was supplied to the 800-barrel storage silo from railroad cars operating on a siding built in to the plant. Rock and sand were trucked in to build the stockpiles.

Stake pounder

An interesting device invented by the superintendent was used to pound blue-top stakes to the exact grade of the bottom of the steel forms. The gadget was made of a 7-foot length of 1-inch aluminum pipe tubing. Fitting loosely around the tubing was a short length of heavy 1½-inch iron pipe.

The rodman placed the end of the tubing on the stake and threw the heavy pipe section downward. This struck a nipple at the end of the tubing which drove the stake into the ground. Foot markings at the upper end of the tubing eliminated the need for a level rod.

In this particular operation, a strong rodman with a sledge went down the line of stakes, driving them by eye to within an inch of grade. Next, a rodman breezed down the line with the pipe gadget, putting the stakes on the money.

Credits

Many contractors and subcontractors are working together—or at least keeping out of each other's way—to get the big job done on schedule. Work on the buildings is expected to be finished this year; equipment installation and finishing work will extend into 1959. Peter Kiewit Sons' Co., Omaha, is the management contractor. It runs the job on a fixed-fee basis and lets out all the work on subcontracts.

Some of the more important subcontractors are Olson Construction Co., Lincoln, Nebr., foundations and floor work; Korshorj Construction Co., Blair, Nebr., sanitary and storm sewers; Newbery Electric Corp., Los Angeles, electrical work; Fred J. Early, Jr., Co., San Francisco, mechanical contractor; and American Bridge Division of United States Steel Corp., steel furnishing and erection.

Charles T. Main, Inc., of Boston is the architect.

Personnel

Robert F. Denig, superintendent of plant engineering for Western Electric is the owner's engineer for the project. Assistant superintendent of plant engineering, William Amman, is WE's resident engineer.

Charles L. Bell is the project manager for Kiewit. For Olson Construction Co., George Alt is the superintendent and George Stannard is the engineer. THE END

Van Brush firm moves

The Van Brush Mfg. Co., Inc., Kansas City, Mo., manufacturer of industrial brushes and brooms, has moved from 320 Southwest Blvd. to new and enlarged quarters at 2740–2756 McGee St. Trafficway. The 3-story concrete and stone building occupies 20,000 square feet of floor space.

"D's" do "class A" job

working tight schedule for busy Virginia contractor

Operator merely moves switches to activate electric motors when he wants to load or spread. Motors control bowl, apron, tailgate, and steer movements. Action is simple — cable connections are short — costs are reduced.

One of 3 D 'Pulls at work for Martin & Gass on the site of new Gunston Junior High School in Arlington, Va., boils in a full load. A second "D" starts to self-load, while waiting for pusher.

"Good production — little down-time."

That's how John M. Gass, Jr. — co-owner of Martin & Gass, Merrifield, Va. — sums up 4 years experience in using LeTourneau-Westinghouse D Tournapulls®. He added that the "D's" ability to do a variety of jobs makes it possible to keep them moving from one spread to another all season long.

Martin & Gass own 3 of the versatile "D's". Often the scrapers work as a production team — as they did in preparing the 6-acre site for the new Gunston Junior High School in Arlington, Va. The "D's" moved 75% of the 37,188 yds. required. Two shovels, 3 crawler tractors and a towed scraper were also on the job. M&G contracted to do all earthmoving, pipe-laying and site preparation on the project.

Roads anywhere without permit

The new D Tournapull, with 9-yd. capacity, has even more profit-potential than older models. This completely mobile earthmover travels job-to-job, on highways and roads without a special permit. The "D" — only 8' wide and with less than 9 tons per axle — meets load-limit requirements everywhere. Its speed range, through 5 gears, is 3.2 to 29.5 mph, to 3.2 in reverse.

At work, D 'Pull* moves fast, maneuvers easily. It can make a 180° U-turn in less than its own length. Using positive power-steer, operator "duck-walks" the "D" out of soft ground. Power-transfer differential on drive wheels goes to work automatically when one wheel starts spinning on slippery or shifting ground. When a wheel feels a tendency to slip, drive-power transfers to the wheel still on firm footing — for effective pull where the better traction is available.

All-electric scraper control

Apron, bowl, and tailgate on the 9-yd. "D" scraper are controlled by instant-acting electric motors. Operator has split-second command of these working parts. Finger movement of switch triggers proper motor; movement is completed *fast*, and with complete precision. Steering is controlled by electric switches too.

This combination of features — obtainable only on LeTourneau-Westinghouse Tournapulls — results in better, faster earthmoving, with less effort required from operators. Ask for full details on this profitable 9-yd. machine, and for verified contractor reports on its accomplishments in all materials.

Loaded "D" hauls to fill through pile-littered section of school building-site. Maneuverable Tournapull can speed along obstructed haul roads safely, without cutting speed. Top speed of this mobile machine is 29.5 mph.

*Trademark DP-1703-DCJ-1

LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 236

Large Dams Congress discusses four topics

International Commission from 44 countries meets in New York; papers cover dam heightenings, stresses, compaction, and admixtures

From all over the world, leading engineers engaged in the design and construction of dams met in New York City, September 15 through 20, as delegates to the Sixth International Congress on Large Dams. The 820 registered delegates represented 44 countries ranging in size from Switzerland to Russia. For this international gathering, engineers from 21 nations prepared 138 papers. These papers covered four technical questions relating to the vital service of storing water for domestic use, power, irrigation, flood control, and navigation.

As is the procedure with international conventions of a technical nature, the papers were prepared far in advance of the meeting so that the delegates would have printed copies available for study and possible comment at the sessions. The papers were not presented personally, but their findings were summarized in a general report covering each of the four technical questions. This summary was given by a general reporter, and the remainder of the session for each topic was devoted to prepared contributions on that specific question by the delegates.

The official languages of the International Congress are English and French, and simultaneous translations in these languages were provided. This service was performed by International Visitor's Center, Inc., using a portable radio transmitter that was set up in the general meeting room at the Statler-Hilton Hotel, convention headquarters. To receive the translations, each delegate was issued earphones and a small transistorized, battery-powered receiver that is hung around the neck. The transmitter employed a loop antenna consisting of a single wire that was strung around the ceiling of the room. Anyone situated within the loop received the broadcasted translations, while those beyond the loop did not. Translators sitting in soundproof booths, also portable affairs, received the words of the speaker directly in their earphones. They then broadcasted a translation in the other language, English or French, practically simultaneously with the speaker.

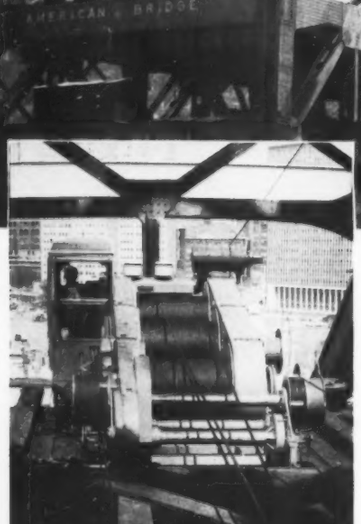
Heightening existing dams

The first question or topic at the initial working session was "Heightening of existing dams, including methods of constructing new dams in successive stages." Jose Toran Pelaez, Spain, was general reporter for this session, and he summarized the 29 papers that were prepared on the topic by members from 15 countries. Senor Toran pointed out the need for increased water supply, both for human and industrial consumption, since he estimated the population of the world would double within the next 40 years. He also stated that the demand for water will not be lessened by nuclear energy since the development of that energy is dependent on water resources. When the capacity of sites with topographic and geologic conditions suitable for new reservoirs does not meet storage requirements, Senor Toran said it became imperative to:

1. "Undertake a revision of all existing dams up to the total utilization of the site, calling for the heightening of existing dams.

2. "Plan reconstruction of new dams for the exhaustive utilization of natural resources, or the construction of new dams by stages."

The Spanish director of construction cited more than 100 cases of dams already heightened or in the process of being heightened. Most of these heightenings have been in Europe. Basic difficulties encountered were (a) deformation status of the structure over which construction is to be done; (b) the joint and espe-



This Clyde Hoist operator easily handles all banked controls from a comfortable, convenient position. Air operated controls are available if desired.

Clyde's smooth, positive, long wearing internal expanding band friction clutches give full-load service with practically no effort to maintain continuous cycle, high production schedules.

CLYDE HOISTS KEEP MATERIALS MOVING... CUT CONSTRUCTION TIME AND COSTS

On the superstructure of the Fort Pitt Bridge under construction by the American Bridge Division, United States Steel Corporation at Pittsburgh, four Clyde Hoists keep materials on the move. Just as on hundreds of other major construction projects the world over, the dependable, high-production operation of these Clyde Quality Hoists have proved a big factor in keeping the job on schedule.

Big advantages on any job are Clyde's large diameter brakes and internal expanding band friction clutches, unbeatable for smooth, safe and accurate-load positioning. In a full range of sizes from 3,000 to 80,000 pounds line pull, Clyde Hoists have all steel bed and side frames, high-strength spur gears, and anti-friction bearings throughout.

Profit by Clyde's sixty years of experience in top hoist engineering. Check Clyde's many design features that best suit your hoisting needs. Send for new hoist Bulletin 34.

"Quality is Always Foremost in Clyde Hoists"

CLYDE IRON WORKS, Inc.
Established 1899
DULUTH 1, MINNESOTA

HOISTS : DERRICKS : WHIRLEYS : UNLOADERS
BUILDERS TOWERS : CAR PULLERS : ROLLERS

For more facts, use Request Card at page 18 and circle No. 237

W. A. Dexheimer, Commissioner of the U. S. Bureau of Reclamation, addresses the opening session of the Sixth Congress of the International Commission on Large Dams in New York City. Seated at the speaker's table, left to right: Claude E. Chauves, secretary general; Susumu Nagata, vice president; Georges Drouhin, outgoing vice president; Frederick Zurmuhlen, New York City's Commissioner of Public Works; Francis S. Friel, chairman and vice president; Gail A. Hathaway, outgoing president; Dr. Jose F. Rebelo Pinto, newly elected president; and Gerald T. McCarthy, vice chairman. The next meeting, in 1961, is scheduled for Rome.

cially the bonding; (c) enlargement of the foundation; and (d) suitable adaptation of appurtenant works (spillway, stilling devices, valves, drainage, etc.). With advanced techniques in concrete construction, however, many problems are being solved. Controls are possible now with regard to temperature of setting, shrinkage of concrete, grouting, and bonding. Keys are also used to improve bonding. The use of prestressed cables and anchoring incorporates the weight of the whole affected section to the structure, so that the ground can participate in the structural balance as actual weight.

Stresses and deformations

Dr. Eng. Tokujiro Yoshida of Japan served as general reporter for the second question, "Observations of stresses and deformations in dams, and in their foundations and abutments; and a comparison of these observations with computations and tests on small scale models." Engineers from 17 countries submitted 59 papers on this topic. They covered not only every type of dam, but also dealt with observations, interpretations, and mathematical analyses of these dams.

"Studies on these papers will help to reduce the margin of ignorance, the so-called margin of safety," said Professor Yoshida, of Kyushu University, "which has been so expensive to pay for and yet did not give assurance of a definite amount of protection. It is impossible, however, to attempt to formulate any universal doctrine from these results."

The general reporter in summing up noted:

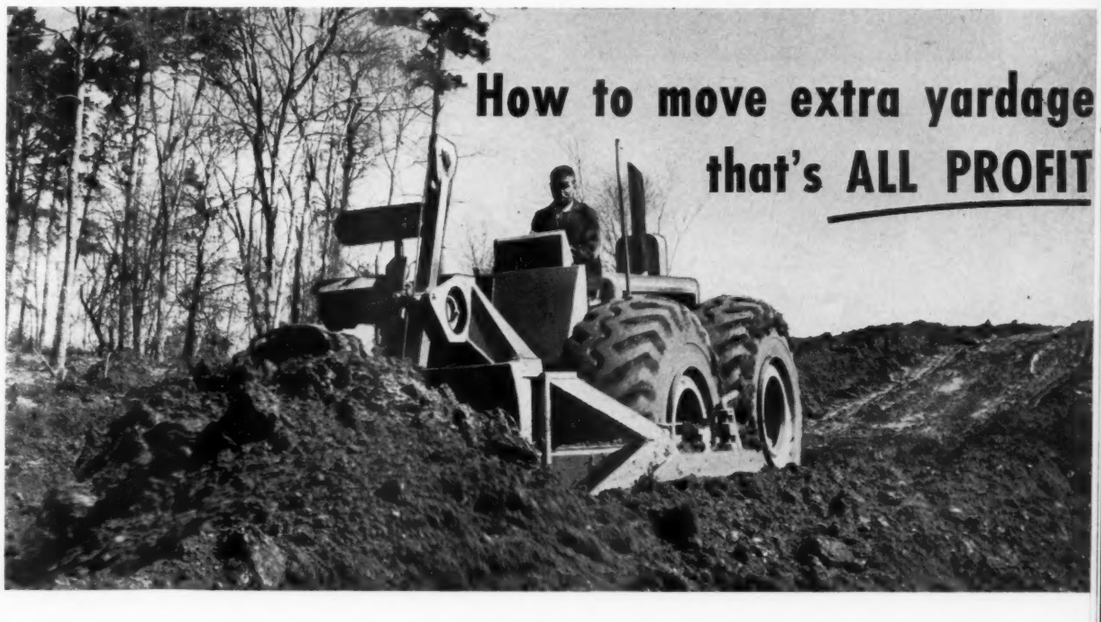
1. With regard to rock foundations, one method of study is that of seismic geophysical explorations which give the propagating velocity of vibration, thus providing mean values for wide-scale survey of the elastic characteristics of the foundation.

2. In order to design a dam to be safe in an earthquake as well as being economical, analysis and model testing must be developed in concert.

3. Even small-scale model tests provide very useful information. Records of field work performed according to specifications during construction are as important as records of observation on the completed dam.

4. The application of prestressing to concrete may be useful in design in some cases where tensile stress in

(*Continued on next page*)



Every tractor works best under certain job conditions . . . crawlers where super lugging power and extra traction are required . . . rubber-tired tractors where speed and mobility are essential. But what about the *non-specialized jobs?* . . . the many kinds of work where *either one may be applied?*

Here are tips that will help you move added yardage . . . earn extra profit dollars with a fast, rubber-tired Tournatractor®.

Train your men for fast operation

The 210 hp LeTourneau-Westinghouse Tournatractor gives you more push-power and pull-power than comparable crawlers, at working speeds above 2 mph. You'll move more dirt when you train your operators to employ this plus power and higher speed to best advantage.

Most important: Use the speed

Remember, speed is the key to Tournatractor's big output. So, instruct operators to USE speed whenever possible. Train them to accelerate *fast*, by picking up their load a little at a time. And keep the pay dirt rolling . . . don't let them try to overload and slow down!

Doze bigger yardage with thinner cuts

Coach dozing operators to take a light cut as they start loading the blade . . . keep going fast . . . go deeper gradually . . . build up to a full load, and keep it moving. They'll take a few feet longer to get a capacity load, but they'll move more yardage in less time. Remember, it's *time saved* that counts. With this fast rig, where it's practical to lengthen the dozing pass, you'll save time . . . and move extra yards.

Push-load scraper non-stop

When you're push-loading with Tournatractor, make sure scraper operators understand that you want them to take a little lighter cut, over a longer distance, at faster speed. They'll heap loads faster and higher, because added acceleration gives a more lively "boiling" action.

Have your Tournatractor operator make on-the-run contact on push-block, and start loading the scraper fast, before it slows down. Get scraper operators to start loading with a thin cut . . . build up momentum load non-stop . . . never try to pick up your load at less than 2 or 3 mph . . . and give the scraper a running start out of the cut.

Give "highball" orders

Save productive time by using Tournatractor's full speed between work assignments, and moving job-to-job. When you move to a new assignment be sure your operators cruise in 4th gear . . . let 'er roll at fastest practical speed.

A little such instruction and supervision will easily make Tournatractor *your most profitable tractor.* And we'll be glad to help you apply this versatile dirtmover's speed factor where it will earn the most for you. We'll also be glad to demonstrate. Call or write us for details.

Full power speeds 210 hp Tournatractor

(Torque converter, power shift)

1st gear	0.0 to 1.4 mph
2nd gear	0.0 to 3.3 mph
3rd gear	0.0 to 7.5 mph
4th gear	0.0 to 17.2 mph
1st reverse	0.0 to 3.2 mph
2nd reverse	0.0 to 7.2 mph

Faster working . . . faster traveling

CT-1405-DC-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 238

(Continued from preceding page)

At the close of the Large Dams Congress, 81 engineer-delegates visited the plant of Sika Chemical Corp., in Passaic, N. J. Here a group is watching a demonstration of revibration of concrete to which a retarding densifier, Plastiment, has been added. Sika was also host to the visitors on an all-day tour of the New York metropolitan area.

a dam exceeds a certain magnitude.

The Japanese authority in closing his remarks pointed out that "electronic computing machines have made possible a tremendous speed-up in calculations, while models and their utilization have been developed to a high degree. These all have led to a greater understanding of the behavior of dams, and it may be expected that they will be more safe, more watertight, more durable, and more economical in the future."

Compaction methods

From Yugoslavia, Ervin E. Nonveiller was general reporter for the question covering "Compaction methods and moisture content for materials used in the construction of earth core and supporting fill for earth and rockfill dams." For this topic, 22 reports were filed from 13 countries.

In summarizing, the chief engineer for Yugoslavia's soil mechanics division stated that soils used in the construction of earth-fill dams can be categorized into four characteristic groups: sound rock; soft rock; gravel and sand, without or with some silt and clay; clay, silty, and predominantly clayey soils. For each group certain compaction procedures are most adequate. Of course there is some overlapping in cases of intermediate types of soils, or according to the flexibility of use of each type of compaction equipment.

From the papers presented, the following methods and equipment predominate for the various characteristic soil types:

ROCK FILL. Dumping in high lifts with abundant application of water for sluicing.

SOFT ROCK. Disintegration and curing in the pit, heavy rubber-tire rollers for compaction sometimes combined with sheepsfoot rollers, vibration and (or) sluicing, according to individual characteristics.

GRAVELLY AND SANDY SOILS. Heavy rubber-tire rollers, vibrating rollers and sledges, internal vibrators, sometimes sheepsfoot rollers when silty clay content is distinct.

COHESIVE SOILS. Heavy sheepsfoot rollers on relatively thin layers (6 inches) with controlled moisture content.

In construction practice there exists a limiting moisture content beyond which operation of equipment on the fill becomes impracticable. So the placement moisture for every material is restricted on the dry side by the condition of nonsettling at saturation; on the wet side by practicability of equipment operation on the fill. Between these two limits, the proper moisture content must be selected under consideration of all factors influencing the purpose, stability, and economy of the dam.

It can be concluded that the proper choice of placement moisture must be based on careful consideration of all factors involved, and that the proper design of an earth-fill dam for an actual site is the one which makes best use of the available materials and construction techniques, giving due consideration to the climatic conditions of the site.

Use of admixtures

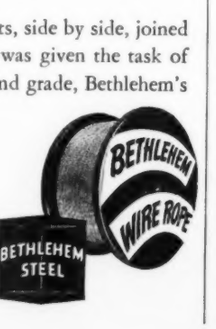
The final question or problem dealt with "Use of admixtures and pozzolanic materials in concrete for dams, and the influence of the finer sand particles." General reporter was Kristen Friis, a Norwegian civil engineer, whose paper was presented by Christian Groner. The topic was covered by 28 papers from 11 different countries. In summing up, the general reporter concluded from the reports that by the use of natural pozzolana it is possible to produce

Where Traffic Now Hums Over New Haven's Waterfront. Scenes like this were so familiar during the building of the Connecticut Turnpike. The one shown here is New Haven's waterfront section as the Quinnipiac River Bridge was nearing completion. The bridge's center span, measuring 387 ft, is the longest continuous plate-girder span in the country.

That big girder being hoisted above the channel weighs 89 tons. The span has four such units, side by side, joined at both ends to 140-ft cantilevered arms. Bethlehem wire rope—tough, flexible, and strong—was given the task of lifting these girders and other heavy loads. The ropes on the two big travelers were Purple Strand grade, Bethlehem's improved plow, which is always recommended for jobs of this nature.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:
CONSTRUCTION • EXCAVATING • MINING • QUARRYING • PETROLEUM • LOGGING • MANUFACTURING



For more facts, use Request Card at page 18 and circle No. 239

a mass concrete with low cement content, but also with required qualities as to workability, homogeneity, density, resistance to frost and chemical agents.

Also that air-entraining agents should be used in the construction of dams to give better frost resistance than is possible with ordinary portland-cement concrete alone. The better workability obtained by admixture of an air-entraining agent also results in lowering the water-cement ratio, and the comprehensive strength of the concrete will not be reduced. A chemical analysis should be made to insure that the agent used does not contain substances that could have a deteriorating influence on the cement in the concrete after a long time.

Most of the experiments made with fly ash and pozzolana established the following:

a. Better workability
b. Better frost resistance
c. Lower heat evolution
d. Lower compressive strength after 28 days, but generally the same as ordinary concrete after 90 days
e. Decrease in shrinkage

New officers

The new president of the International Commission on Large Dams is Dr. Jose F. Rebelo Pinto (Portugal); Dr. Pinto, director, Portugal Water Power and Irrigation Department, succeeds Gail Hathaway, U. S. The six vice presidents include Francis S. Friel (U. S.), Milan Vercon (Yugoslavia), A. A. Borovoy (USSR), Susumu Nagata (Japan), Pietro Fronsini (Italy), and Hamed Suleiman (United Arab Republic).

The next congress will be held in Rome in 1961. The New York City meeting was the second meeting of the International Commission in the United States; the previous gathering in this country was held in Washington, D. C., in 1936. Since its formation in 1930, the Commission has held two congresses in Stockholm and one each in New Delhi and Paris. The latter city is the headquarters of the ICLD. The Commission was an outgrowth of the rapid development of hydroelectric installations after World War I. It was formed to encourage improvement in the design, construction, maintenance, and operation of large dams by bringing together information on these subjects, and by studying questions related to them.

As an executive committee member of the U. S. delegation, W. A. Dexheimer, Commissioner, U. S. Bureau of Reclamation, told the opening session that the engineer is the key figure in the never-ending efforts to improve and advance civilization. Francis S. Friel, chairman of the U. S. Committee on Large Dams, gave the opening address of welcome, and observed how the members of the congress were drawn together by a common concern.

"We have found it easy," said Friel, "to discuss our undertaking and our mutual professional interests —to 'talk shop'—without insisting first that we must all be as one mind as to the underlying issues of political philosophy and political economy. From these contacts on technical matters has come a mutual admiration, respect, and affection which transcends barriers of language, social customs, and politics.

"From such beginnings and from the example we set here of frank, unrestrained discussion, perhaps men can yet learn to deal with one another without prejudices, so that even the troublesome ideas which cause dissension and war may presently be discussed frankly and without restraint."

Following the convention, a large number of delegates participated in three specially arranged study tours, each covering visits to dams in different parts of the United States. The tours lasted a week, and were divided into the southeastern, midwestern, and northwestern regions of the country.

THE END

A-C opens engineering, research facilities

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has completed construction of new engineering, development, and research facilities in Greendale, a Milwaukee suburb, about two miles south of the firm's West Allis works. The new facilities include two buildings providing approximately 23,000 square feet of space, and houses an initial group of 100 technical and administrative personnel.

Projects carried out here include design, construction, and testing models; mock-ups and prototypes of nuclear reactors; and associated equipment. When in full operation, the Greendale laboratories will employ up to 200 persons.

New LIMA 64-T Truck Crane with 100′ boom and 30′ jib reaches out almost horizontally to pour concrete on foundation job.

LIMA 64-T . . . new 50-ton truck crane.

New LIMA 64-T Truck Crane combines high capacity, long reach, low weight

The 64-T Truck Crane with 50 ton rated capacity is the latest addition to the long line of dependable, high performance LIMA cranes. The 64-T is completely designed and built, from the ground up, by LIMA. The latest developments in high strength steels are utilized to combine high capacity and long reach, with low weight. The main frame and components of the 64-T carrier is of "T-1" steel (100,000 psi yield strength).

Goes anywhere truck can go

Mounted on 12 heavy duty tires, the LIMA-designed 8 x 4 (rear drive) or 8 x 6 (front and rear drive) carrier will go anywhere a truck can go, on-or-off highway, at speeds up to 25 mph.

The LIMA Type 64-T Truck Crane will raise a 150-ft. boom, plus 30-ft. jib (180′-0″ total), from the ground without auxiliary aid.

Gantry can be lowered to cab height while boom is suspended. Rear counterweight, pin connected front and rear outrigger boxes and beams are easily removed to reduce road weight. Hydraulic power steering, precision air controls and air brakes insure easy operation to reduce operator fatigue and produce top performance.

Versatile LIMA Cranes

LIMA cranes—capacities to 110 tons crawler mounted and 70 tons rubber mounted—are highly versatile. Interchangeable front ends make them adaptable to almost every job; they can be used as cranes, shovels, draglines or pullshovels.

Learn now why LIMAS are the choice everywhere for rugged, dependable performance! See your nearby LIMA distributor or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio

BALDWIN · LIMA · HAMILTON

5839

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

For more facts, use Request Card at page 18 and circle No. 240

Laying 2,500 linear feet of concrete pavement in an 8-hour day starts with preparation of the subgrade by a Blaw-Knox subgrader. The rig also pulls a planer to smooth the ground between the B-K 10-inch forms.

Fast concrete paving is average wo[r] hi

by ANTHONY N. MAVROUDIS, field editor

A high-capacity paving spread, together with an efficient batching setup, enabled a contractor to average 2,500 linear feet of 24-foot-wide, 10-inch-thick concrete pavement every eight hours—even though many uncompleted structures prevented uninterrupted paving.

The work, handled by S. J. Groves & Sons Co., Minneapolis, Minn., called for the paving of the 14-mile relocation of U. S. 42 and U. S. 224 around Lodi and Leroi, Ohio. The two adjoining contracts, amounting to $6,750,000, covered two 24-foot roadways, except for a 5-mile stretch that required only one 24-foot roadway. Paving was done in 24-foot widths, using two pavers in the paving train.

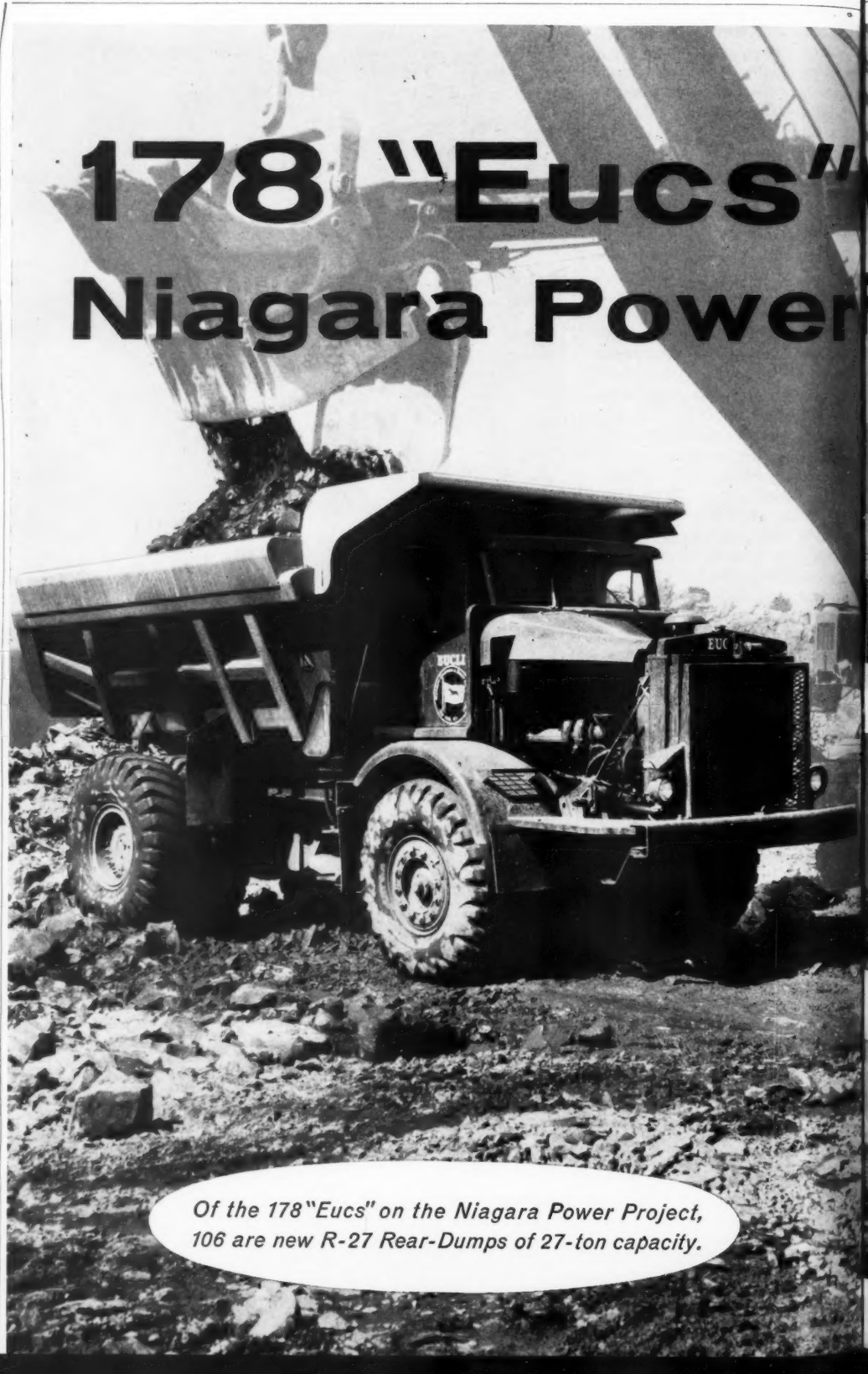
Subgrade preparation

Every step of the paving and batching operation was mechanized for high production. Groves had about 8,000 linear feet of 10-inch steel forms on the job to form the 10-inch slab. Forms were usually kept set in place ahead of the pavers for at least a day's pour—or 2,500 feet—even though the allowable minimum was 500 feet. A Formgrader cut the form trench, and form setting was speeded by driving the steel pins with an air hammer powered by a self-propelled air compressor. And to complete the form-setting operation, the crew used form tampers to securely set and level the sections.

In preparing the subgrade ahead of the paving train, Groves used a 24-foot subgrader to remove about 2 inches of material between the forms. The subgrader also pulled a planer to smooth the surface of the subgrade, which was later compacted by a tandem-wheel roller. Between the roller and the first paver, Groves had a water tanker to wet down the subgrade and forms. A 24-foot-long spraybar attached to the side of the truck extended across the 24-foot roadway width.

The first paver, riding alongside the forms, dumped the 1½-cubic-yard batches of concrete on the subgrade in front of an auger-type spreader. It trimmed the mix to a 4½-inch depth so that welded-wire mesh reinforcing could be placed just below the center of the slab. The spreader was equipped with two vibrators, which were pulled through the mix near the forms to leave smooth, straight edges.

The spreader was also equipped



Of the 178 "Eucs" on the Niagara Power Project, 106 are new R-27 Rear-Dumps of 27-ton capacity.

...or high-capacity spread

Paving, batching setup geared to lay 2,500 feet of pavement daily; one rig does good job on transverse finishing, floating operations

with a rear-mounted steel wheel, having steel lugs welded around its circumference, to automatically mark the correct spacing of the transverse bars. The bars were dropped into place by a workman riding on a rear platform before the wire reinforcing was positioned. Groves used a tractor-drawn trailer riding along the shoulder, to move the reinforcing mesh alongside the spreader.

After the reinforcing was placed, the second paver placed additional concrete to complete the 10-inch slab thickness. This second lift was spread by a second auger-type spreader riding the forms.

New finisher used

Groves used a new finishing machine behind the second spreader to handle both the transverse finishing and the floating operations. This machine eliminated the need for the two transverse finishers that would have been required in this multi-paver spread, and for a longitudinal floating machine. The finishing machine, which combines the operations of transverse and float finishing, requires only one operator. The contractor never had to slow down for the machine, for it kept pace with the paving spread.

The machine is equipped with double screeds to handle the transverse finishing, while a flat transverse plate—floating over the concrete surface—replaces the longitudinal floating. Hinges on both sides of the machine, and built-in pneumatic tires, permit it to be dismantled easily and hitched to trucks for transportation.

Equipment and materials used

- Blaw-Knox 10-inch steel forms
- Cleveland Formgrader
- LeRoi Tractair air compressor
- Cleveland form tampers
- Blaw-Knox 24-foot subgrader
- Cleveland planer
- Ford water tanker
- Two Koehring 34-E pavers
- Jaeger auger-type spreaders with Jackson vibrators
- Tractor-drawn trailer
- Heltzel float-finisher
- Burlap drag powered by a Wisconsin engine
- Heltzel Flex-Plane machine
- Hunt white-pigmented curing compound
- Shop-built mechanical pin-puller
- Swinging overhead hoist mounted on a Ford truck
- Clipper portable saw
- Blaw-Knox 3-compartment aggregate bin
- Three Blaw-Knox 600-barrel cement silos
- Detecto scales
- Huron, Portland, and Universal cement
- Aerex air-entraining agent

The finishing machine was followed by a hand-finishing crew using aluminum straightedges to complete the finishing of the surface. A contractor-built burlap drag, powered by an engine, rode along on the forms to impart the desired surface texture.

Curing was handled by a Heltzel Flex-Plane machine, which sprayed Hunt white-pigmented curing compound across the slab. This curing permitted the forms to be stripped the following day.

Form stakes were removed by a contractor-built mechanical pin-puller. Forms were then picked up by a swinging overhead hoist mounted on a truck and moved ahead of the paving train.

The longitudinal and transverse joints were cut in the hardened slab by a portable saw using diamond blades. Transverse joints, spaced on 60-foot centers, were cut 2 inches deep and later filled with a hot asphaltic filler.

Batching operation

Groves kept the pavers constantly

(Continued on next page)

"Working on the ...Project

Gull Contracting & L. G. Defelice are using 36 of these 27-ton "Eucs" on their 4½ million yd. channel excavation work.

"Twin" Scrapers in the Euclid fleet of Channel Constructors help remove overburden from rock that will supply the big aggregate plant.

Balf-Savin-Winkelman have Rear-Dump and Bottom-Dump "Eucs" in their fleet. Earth excavation for the two inlet channels is hauled in 12 bottom-dumps.

THE $625 million Niagara Power Project being constructed by the Power Authority of the State of New York is one of the world's greatest hydro-electric developments. When completed in 1962, the project will produce well over 2 million kilowatts of electricity from water that now flows unproductively over Niagara Falls . . . that's enough to supply the household needs of a city the size of Chicago —with over 3½ million population!

Consisting of five different sections, all phases of this tremendous job are now under contract. Although much of the work is still in the preliminary stage there are Euclids on every section—a total of 178 of them already! With many millions of tons of rock excavation to be moved, Rear-Dump "Eucs" predominate, but big Bottom-Dumps and "Twin" Scrapers are also being used. Contractors on 4 of the 5 sections have purchased a total of 106 new R-27 Euclids for their work. With 325 or 335 h.p. engine, 4-speed Torqmatic Drive, converter lock-up, and 18.00 x 25 tires all around, this new "Euc" moves 27-ton loads on steep grades and tough hauls.

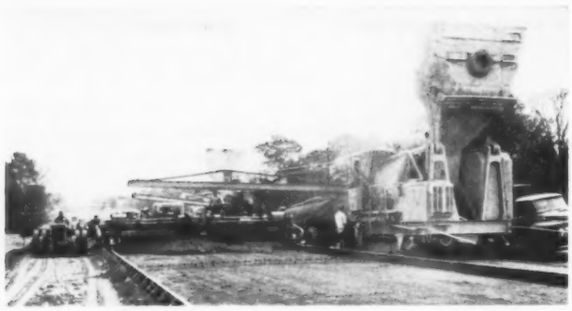
These contractors are using "Eucs" on all 5 sections:

- Merritt-Chapman & Scott Corp. 64
- Channel Constructors 37
  (Peter Kiewit Sons Co., Perini Corp., Morrison-Knudsen Co. Inc., and Walsh Const. Co.)
- Gull Contracting & L. G. Defelice. 36
- Edw. Balf Co., Savin Bros., D. W. Winkelman. 41

Euclid equipment has proved its ability to maintain high production at low cost for over 25 years . . . on big, rush projects like this one and on smaller mining and construction operations, too. For reasons why "Eucs" are *your* best investment see your Euclid dealer before you figure that next job!

EUCLID
Division of General Motors Corp.
Cleveland 17, Ohio

←For more facts, circle No. 241



The first Koehring 34-E paver dumps concrete in front of a Jaeger auger-type spreader, which trims the mix to a 4½-inch depth. Then wire-mesh reinforcing will be placed to half the depth of the finished slab. Reinforcing is carried by the tractor-drawn trailer outside the forms, left.

The second Koehring 34-E paver dumps concrete over the reinforcing to bring the slab to full depth. A second Jaeger auger-type spreader strikes the mix off to bring the slab to its full 10-inch thickness.

(*Continued from preceding page*)

supplied by using a fleet of 20 Ford T750 batch trucks, each with a 4-batch capacity. These were owned and operated by contract hauler DeMatteo Bros. & Co., Inc., Columbus, Ohio, which also hauled the sand and stone to the centrally located batch plant.

The plant consisted of a 3-compartment aggregate bin, charged by a conveyor belt through a 3-way electrically operated chute, and three 600-barrel cement silos. Sand and stone were picked up from the stockpiles through an 80-inch-diameter reclaiming tunnel, made up of Armco Multi-Plate sections, and equipped with six air-operated feeders, a pair for each stockpile. The feeders dumped onto a 24-inch-wide reclaiming belt, which charged the 30-inch-wide, 240-foot-long inclined conveyor leading to the aggregate bin. The belts, feeders, and the 3-way chute were electrically operated by a man stationed atop the aggregate bin.

Electronic controls made the batching of aggregates automatic. Two batches were weighed out, one at a time, and dumped into a 2-compartment discharge hopper. Each compartment was charged individually by means of a flap gate activated by the plant operator. Both batches, after

A conveyor belt delivers aggregates from a reclaiming tunnel to an electrically operated 3-way chute that charges the 3-compartment aggregate bin. Two batches are being dumped, simultaneously, into the Ford T750 batch truck.

Problem: *How to drain the backed-up water in the ditch along this road? Farm is damaged by overflows during heavy rainstorms.*

Solution: *A Small-diameter Wheeling Corrugated Culvert. Designed to outlast the road itself, it comes in long, strong, easy-to-install sections.*

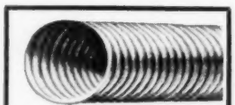
End roadside drainage problems with Wheeling Metal Culvert Pipe

A single, small-diameter Wheeling Corrugated Culvert Pipe disposes of backed-up water where access roads meet secondary roads.

Inexpensive to buy . . . light and easy to install . . . heavily galvanized to resist weather . . . Wheeling Metal Culverts save in initial cost and in maintenance cost. They have the flexibility needed to withstand shock of heavy loads and pressure from shifting fill.

Wheeling Metal Culvert Pipe or Pipe Arch, in copper-bearing steel or copper-bearing pure iron, plain galvanized or bituminous coated (with or without paved invert) is available in a wide range of gauges and diameters.

Contact your nearest Wheeling warehouse, culvert plant, or sales office. Wheeling Corrugating Company, Wheeling, West Virginia.



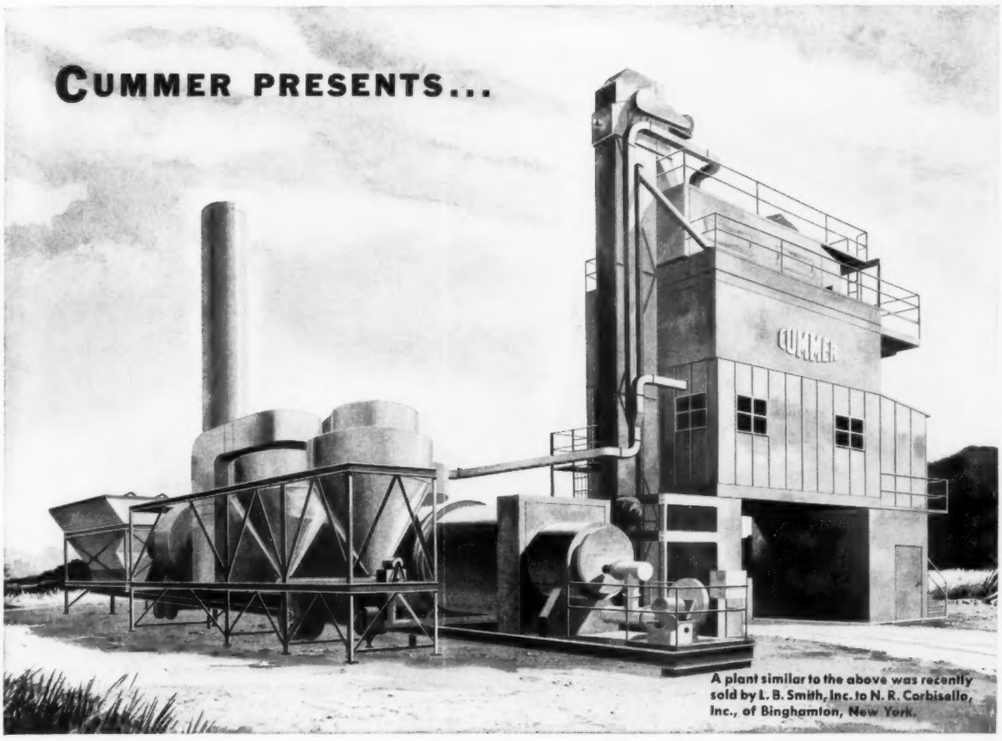
Large-diameter Wheeling Pipe—easily controls normal flow of fast-moving streams.

Wheeling Pipe Arch—a wide, comparatively flat-bottom type of corrugated metal pipe for use where headroom is limited.

WHEELING CORRUGATING COMPANY - IT'S WHEELING STEEL

WHEELING WAREHOUSES, SALES OFFICES OR CULVERT PLANTS ARE IN: Atlanta Boston Buffalo Chicago Columbus Des Moines Detroit Houston Kansas City Louisville Madison Martins Ferry Minneapolis New Orleans New York Peoria Philadelphia Richmond St. Louis.

For more facts, use Request Card at page 18 and circle No. 242



A plant similar to the above was recently sold by L. B. Smith, Inc. to N. R. Corbisello, Inc., of Binghamton, New York.

A COMPLETELY NEW Asphalt Plant

• PORTABLE OR STATIONARY • UNITIZED FOR LOW-COST ERECTION
• 4000# - 5000# - 6000# BATCH CAPACITIES • 120 TO 210 TONS PER HOUR

Do you want to keep your costs down—keep competitive? If so, investigate this new Cummer Model-C Unitized Asphalt Plant. This new design—2 years in development—gives you all these advantages:

- **Cummer Unitized Construction—each component is complete and ready for field use.**
- **The most portable high capacity batch plant available—only 8 to 10 units.**
- **Everything at grade level—no pits required.**
- **Stack-up tower with pin-construction eliminates bolting.**
- **Apron feeder replaces both bucket elevator and reciprocating feeder.**
- **Friction-type trunnion wheel drive on dryer eliminates bull gears or chain.**
- **Heavy-duty mixer with *easy* liner replacement through gate.**

For the complete facts, contact your Cummer distributor—or write our home office direct.

THE F. D. CUMMER & SON COMPANY

Designers and Builders of Fine Asphalt Plants Since 1892

2110 East 21st Street • Cleveland 15, Ohio

EXPORT OFFICE: BROWN & SITES COMPANY, INC., 50 Church Street, New York 7, N. Y.

CABLE ADDRESS: "Brosites"—New York

CUMMER

For more facts, use Request Card at page 18 and circle No. 245

Pan

G

Malcol
North
moving
their p
makes
The
buildin
Catawb
ule, the

Pans do 1-mile hauling stretch in 6 minutes, round trip . . .

GULF MAKES THINGS

Malcolm and Benjamin Blankenship of Charlotte, North Carolina, set an almost unbelievable pace in earth-moving on a recent job, with Gulf fuels and lubricants in their power equipment. And they can tell you—Gulf makes things run better.

The job? Clearing, grading, drainage and bridge building on a 4.6 mile section of U.S. Route 29, from the Catawba River to the Charlotte bypass. On a tight schedule, they moved 1,132,000 cubic yards of material.

The pace? Take pan trip time. At one location, only 6 minutes, *round trip*, over a 1 mile hauling stretch. Pans averaged 20 miles an hour. Excavation volume? Over 10,000 cubic yards a day.

How did they do it? They used modern equipment, serviced it properly, and depended on Gulf fuels and lubricants for smooth dependable operation. As Ben Blankenship says: "Earth moving pans do a bigger day's work with good fuel and lubrication."

Gulf teams up with the Blankenships. Left to right: W. C. Ritchie, Gulf Sales Representative; Roy G. Burkhalter, Sr., Gulf Sales Representative; Banks Massey, General Superintendent, Blankenship Brothers; Benjamin M. Blankenship, Partner; Mike Blankenship (son of Ben) on machine.

Ready to roll—on Gulf quality fuels and lubricants. Blankenship equipment on this job included 9 pans, 3 sheepfoot rollers, 3 motor graders, 3 dozers, 3 push cats, and 1 back hoe. In fair weather or foul, if the State Engineer said, "It's a work day"—Blankenship equipment rolled continuously!

RUN BETTER!

Senior partner Malcolm Blankenship adds: "We credit Gulf with helping to keep our equipment moving at relatively high speeds—in all kinds of weather—and getting maximum output from every machine."

How about *your* operation? Gulf can make things run better on your jobs, too. Ask a Gulf Sales Engineer. Just call your nearest Gulf office. Meanwhile, mail coupon for revised edition of "Contractors' Guide," the lubrication and maintenance manual for heavy equipment.

GULF

GULF OIL CORPORATION
Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.

☐ Please send me the free "Contractors' Guide"

☐ Send free booklet "Gulf and Your Business."

Name_____
Title_____
Company_____
Street_____
City_____ Zone_____ State_____

SP-9310

W. C.
r, Sr.,
Super-
nken-
chine.

ank-
foot
back
'It's
usly!

POWER UP...

with **DENISON** hydraulic equipment... the **LEADERS** do!

Why? Because with field-proved *Denison 2000 psi hydraulic power* in their earthmoving equipment—leading manufacturers find they're automatically building in *lower operating costs* and month-after-month *continuous trouble-free performance* on the job.

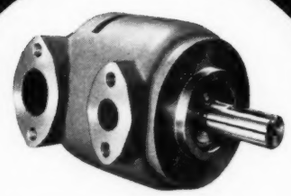
Realistic field-tests prove the basic design advantages of 2000 psi Denison Vane Pump power: the *high volumetric efficiency is continuous* . . . never a drop-off in work speed or sluggish operation that slows equipment and adds cost to the job.

Three more features of Denison's 2000 psi vane pumps can save you money, too. Unique *balanced-vanes* automatically compensate for wear to keep pump efficiency high, maintenance cost almost nil. Exclusive "cartridge construction" makes in-the-field servicing extremely fast and simple. *All-weather starting* feature prevents pump damage—even under most severe conditions.

Add it up. Denison 2000 psi hydraulic power means continuous peak operating efficiency on the job. Costs are lower because *faster time cycles* are possible. Jobs *stay on schedule* . . . and *bids are more accurate* because you can *count* on a steady workload. Downtime . . . maintenance and repair costs are cut, too.

You guarantee less weight . . . less cost-per-horsepower —*more payload in your equipment* with a Denison 2000 psi Vane Pump as the heart of your hydraulic system.

Your Denison Hydraulic Specialist can tell you more about how to *significantly improve performance of your equipment* with hydraulic power up to 5000 psi . . . and how to make it *more profitable to the man who buys it.*



2000 PSI HYDRAULIC POWER

. . . is incorporated into dozens of types of earth-moving equipment by leading manufacturers. *Payoff:* Denison 2000 psi Vane Pumps help get jobs done faster . . . with trouble-free power to spare for toughest workloads.

DESIGNERS—ENGINEERS

Write for your copy of Bulletins 200 and 201—"How to Design More Efficient Hydraulic Power Into Mobile Machinery" and "Balanced Vane 2000 psi Hydraulic Pumps".

DENISON ENGINEERING DIVISION
American Brake Shoe Co.
1262 Dublin Road • Columbus 16, Ohio

DENISON HydrOILics

HYDRAULIC PRESSES • PUMPS • MOTORS • CONTROLS

Denison and Denison HydrOILics are registered trademarks of Denison Engineering Division, ABSCO.

For more facts, use Request Card at page 18 and circle No. 243

Transverse finishing and the floating operations are handled by a single rig, a Heltzel float-finisher. The machine has two transverse finishing screeds in front and a flat plate which floats the surface of the slab. One man, operating the rig, keeps up with the paving spread.

eration. Cement, supplied from various sources, was trucked in by enclosed truck tankers and dumped into a hopper. The hopper, in turn, fed a screw conveyor leading to the elevator.

About 36 gallons of water was added per batch at the pavers, the water being supplied by a 4,000-gallon tanker riding between the two paving machines. In order to maintain about 4½ to 5½ per cent air content in the concrete, about 9 ounces of air-entraining agent was added per batch at the pavers.

The completed road has a 26-foot depressed grassed median separating the two 24-foot roadways, and each roadway has a 10-foot-wide stabilized outside shoulder.

Personnel

C. W. Kerns was the superintendent; S. R. Shoenfelt, the project engineer; and John Sheehan, the paving superintendent for S. J. Groves & Sons Co. Frank G. Randall was the resident engineer for the Ohio Department of Highways. THE END

Chrysler division moves to new headquarters

The Marine & Industrial Engine Division of Chrysler Corp., Detroit, Mich., has relocated its entire operation to new, expanded production and service facilities at 12200 E. Jefferson Ave., Detroit. Offices have already been moved from 7700 Russell to the new division headquarters.

going to the discharge hopper, were released simultaneously to load two of the four aggregate compartments of the batch trucks.

The plant operator maintained control of the truck movements through three signal lights controlled by three switches on the control panel. These lights ordered the the batch-truck drivers to move "back", "forward", or "go". The signaling system helped keep the plant operating smoothly and eliminated the need for a ground spotter to position trucks. The trucks were loaded at the aggregate bin, with 1,702 pounds of No. 3 stone, 1,610 pounds of sand, and 929 pounds of No. 4 stone per batch before leaving for the cement silos.

The cement batching setup consisted of two ground storage silos and one batching silo, all interconnected by a 3-way chute and a 60-foot-high enclosed bucket elevator. Electronic controls, hooked up to the scales, also made the batching of 846 pounds of cement per batch an automatic op-

Three 600-barrel silos—two on the ground for storage and the raised one serving as the discharge silo—feed the required amount of cement per batch into a batch truck. Cement is fed to the silos through the 60-foot enclosed elevator and the 3-way chutes.

Go right into the mud if you're driving with a non-slip differential

Why leave your pick-up 500 yards from the job when a simple, low-cost option . . . available on most standard pick-ups and station wagons . . . will bring you right up to where the graders are working? Called by many names, this revolutionary new non-slip differential automatically applies the power to the wheel that has the greater traction. Whether you're in mud, snow, ice, sand, or loose gravel, if you have any traction at all, you move.

See your dealer. Ask for a demonstration of the new non-slip differential. Any patch of ice or mud hole will show you what it will do. And, when you consider the time-saving convenience of the non-slip differential . . . you'll know it's a bargain. For further information, write Dana Corporation, Toledo 1, Ohio.

DANA Spicer

DANA CORPORATION • TOLEDO 1, OHIO

DANA PRODUCTS Serve Many Fields:

AUTOMOTIVE: Transmissions, Universal Joints, Propeller Shafts, Axles, Powr-Lok Differentials, Torque Converters, Gear Boxes, Power Take-Offs, Power Take-Off Joints, Clutches, Frames, Forgings, Stampings.
INDUSTRIAL VEHICLES AND EQUIPMENT: Transmissions, Universal Joints, Propeller Shafts, Axles, Gear Boxes, Clutches, Forgings, Stampings.
AVIATION: Universal Joints, Propeller Shafts, Axles, Gears, Forgings, Stampings.
RAILROAD: Transmissions, Universal Joints, Propeller Shafts, Generator Drives, Rail Car Drives, Pressed Steel Parts, Traction Motor Drives, Forgings, Stampings.
AGRICULTURE: Universal Joints, Propeller Shafts, Axles, Power Take-Offs, Power Take-Off Joints, Clutches, Forgings, Stampings.
MARINE: Universal Joints, Propeller Shafts, Gear Boxes, Forgings, Stampings.
Many of these products manufactured in Canada by Hayes Steel Products Limited, Merritton, Ontario.

For more facts, use Request Card at page 18 and circle No. 246

Management

Planning and production:

Job-site equipment

by **GEORGE E. DEATHERAGE, P. E.**
construction consultant

This is the thirty-sixth of a series of articles on Construction Management by George E. Deatherage, P. E., construction consultant. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by Geo. E. Deatherage & Son, Satsuma, Fla. The manual is used in a training course for superintendents and project managers, and is directed primarily at those contractor employees who have reached the foreman level or its equivalent, and who need practical help in order to take complete charge of construction projects themselves.

Once a job is started, production should be checked and methods analyzed so that efficiency may be improved and costs lowered. The results are then summarized and recommendations made for improved methods. In the summary, all findings are reduced to dollars and cents. This check, covering every step taken since the job was bid, goes back to the very first considerations in estimating: deciding what equipment will be required and the proper methods to use.

Going back to this step, we find that the estimator should consult the project manager to determine the methods to be used and the necessary means to bring those methods to a successful conclusion. This means providing access and egress to and from the site, and selecting, designing, assembling, installing, erecting, and providing all the proper machinery and tools for doing the work.

However, this can be done only when a thorough knowledge of the volume of work has been secured, when job conditions and other requirements are fully understood, and when the rates of progress and completion dates have been established. It also involves a working knowledge of the estimating procedure as a basis for securing the information.

Construction schedules should be prepared for all work, large or small, as a basis for all plant and equipment provisions. Plant selection is based upon an understanding of progress requirements, practical output from selected equipment units, adequate allowance for the age of the plant, and consideration for the physical ability of the operator. Improper planning and scheduling can easily increase the cost of a project by 10 to 15 per cent, and often this is the amount of the figured profit. Planning and scheduling, put down in writing, may be studied, analyzed, and constantly improved.

Equipment layout

As the basic foundation for the design of the equipment layout, there are the simple Process Chart, Gang Charts, Man and Machine Charts, Man and Mobile Machine Charts, and Time and Motion Study. All of these aid in selecting methods which require the fewest operations and result in the greatest efficiency.

The first step in making an equipment layout is the preparation of the flow sheet or flow diagram, a single line sketch which shows the various operations and movements in an operation. The ideal is the continuous production line technique: the raw material comes in at one end and goes out the other as a finished product. This means that there must not be any backtracking, reverse movements, sidetracking, duplication, or lost motion.

Most activities on construction work have to do with moving ma-

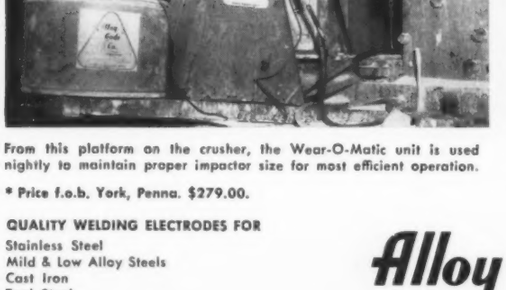
How semi-automatic hard surfacing saves time and material at Bradford Hills Quarry

"Changing to the semi-automatic application of nickel manganese surfacing material almost saved us the price of the Wear-O-Matic machine in just five weeks," says Thomas Risbon, Welding Foreman for Bradford Hills Quarry, East Petersburg, and Downingtown, Pa.

The Wear-O-Matic unit at Bradford Hills Quarry is used almost exclusively for maintaining their new 57-60 Universal Impactor. Over a five week period, nightly maintenance on this crusher required 500 pounds of 7/64" Wear-O-Matic nickel manganese wire to provide normal operating tolerances.

During a similar period, 800 pounds of ¼" nickel manganese stick electrodes were required to provide the same amount of wear protection to the impactors.

Savings in maintenance operations in your industry are important because they affect profits. Find out how the Wear-O-Matic process can help lighten your maintenance load. It's built right and priced right* to provide for you the most efficient maintenance on all equipment subject to wear. Request Bulletin HS-123 Alloy Rods Company, P. O. Box 1828, York, Pennsylvania.



From this platform on the crusher, the Wear-O-Matic unit is used nightly to maintain proper impactor size for most efficient operation.

Welder Gene Johnson says, "It's easy to turn out square edged impactors like this with the Wear-O-Matic process and, it's less tiring than stick electrodes."

* Price f.o.b. York, Penna. $279.00.

QUALITY WELDING ELECTRODES FOR
Stainless Steel
Mild & Low Alloy Steels
Cast Iron
Tool Steel
Bronzes & Dissimilar Metals
Hard Surfacing Electrodes & Wires

Alloy Rods Company
YORK, PENNSYLVANIA • EL SEGUNDO, CALIFORNIA

For more facts, use Request Card at page 18 and circle No. 247

terials, and, therefore, the greatest savings are concerned with material handling rather than processing or fabricating, and this should show up in flow sheets or diagrams.

There are numerous types of flow sheets or diagrams, the simplest being the multicolumn type. On this type of sheet, the machines, equipment, and hand-processing stations are set down on the left-hand side, in the order in which the work is to be processed and handled. The details of each movement or process are set down on the right-hand side. This is illustrated by Figure 1, which serves as a preliminary work sheet on which all major factors can be identified. A study of the chart shows the elements to eliminate or combine in order to effect economies.

In this particular flow sheet, it is assumed that the girder and beam forms have been designed, working sketches prepared, bills of material and cutting lists made and placed in the hands of the carpenter foreman. A cutting list makes it possible for the lumber to be cut to length or width before it reaches the workbench. Then, all that should be needed is the assembly.

This type of flow sheet can be adapted to other types of work, such as on asphalt or concrete roads, where each mechanical operation is set down in the proper sequence. Many times, the sequence in which the operations are performed has a great bearing on final costs.

Layout sketches

Although one may set up process charts and flow sheets to assist in visualizing an equipment layout, it is very necessary in the final analysis to prepare an equipment layout plan. Figures 1 and 2 indicate that there are entirely too much handling and too many delays in this operation.

To correct the situation, a third layout is developed, Figure 3. Here, a conveyor system is used, and the processing machines are arranged along the production line in a continuous sequence.

In this arrangement, the various pieces of lumber are cut to the size needed by bench workers. The material is palletized on the conveyors so that there is no waiting for pieces to be transported one at a time. Any trimming is done at the bench with overhead spring-suspended saws, which eliminates any backtracking to the table saws.

Although the flow sheet and equipment layout examples are simple, they contain all the elements that might be encountered on a much larger and more complicated installation. Once the work cycle has been charted and a flow sheet made, the placing of the machines in the proper positions is a simple matter.

Flow diagrams and equipment layouts are facilitated by the use of standard sheets, as in Figure 4.

Equipment on the site

The estimator must know the speed and capacity of the individual pieces of equipment on the type of work being done. A great deal of this information can be secured from manufacturers. In requesting it, one should ask for data on capacity, specifications, and installation.

With this information at hand, the estimator should discount ratings for top production and make allowances for the condition of the machine. It is best to provide for lost time when equipment is old and not capable of producing at the normal rate. Since the entire equipment layout must be geared to approximate production needs, either hourly or daily, the machines should be selected accordingly.

Before equipment is located on the job, complete information should be

(Continued on next page)

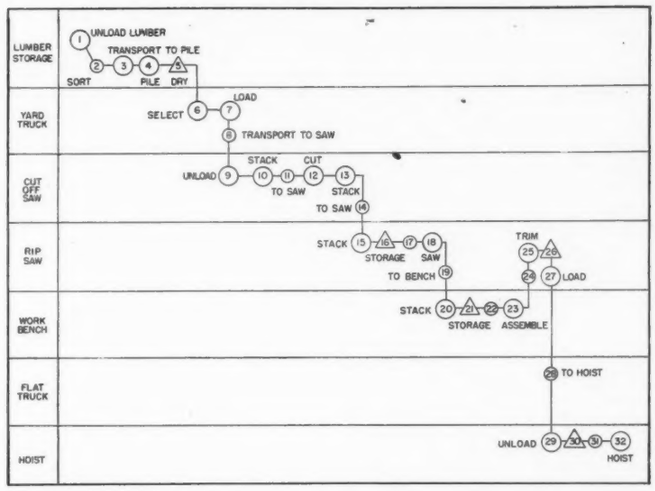


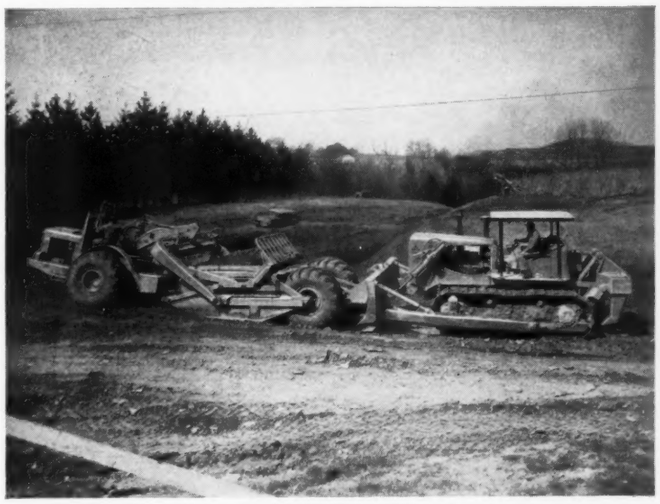
Figure 1.

He beat the schedule in spite of bad weather

with Allis-Chalmers Construction Machinery

In spite of the loss of 44 working days due to bad weather, the Bracken Construction Company finished the relocation of Route 861 near Bethlehem, Pennsylvania, well ahead of the 135 days allotted.

Dale Bracken
Bracken Construction Co.
Sligo, Pennsylvania



HD-21 quick-loads TS-260 motor scraper. With ripper, HD-21 weighs approximately 61,634 lb . . . delivers 225 net hp.

225,000-yd operation

This contract included the moving of 225,000 cu yd of dirt and shale. Bracken used a fleet of Allis-Chalmers machines on this operation—HD-21 and HD-16 tractor-dozers and TS-260 motor scrapers. The company also owns an HD-6G tractor shovel and a TR-260 rock wagon.

Job superintendent, Dale Bracken, says the powerful HD-21 tractor-dozer, equipped with a Tractomotive ripper, did an excellent job—loosening 24 in. of shale and rock at a pass. On tough jobs like this, the ability of the HD-21 torque converter tractor to automatically match power and speed to load lets it handle such large cuts.

Two of Bracken Company's HD-16 tractor-dozers shape a heavy fill up to 57 ft deep. A third HD-16 was used for push-loading in the borrows.

2,400-ft cycles

Speeding through a 2,400-ft cycle, each TS-260 with a struck capacity of 11 cu yd averaged 1,000 cu yd per shift. Bracken reports positive forced ejection and high apron lift saved time by dumping wet loads quickly and cleanly.

Preventive maintenance helps build high production

Mr. Bracken credits his company's ability to meet earth-moving schedules to the combination of modern construction machinery and a sound preventive maintenance program. Allis-Chalmers construction machinery will give *you* dependable performance like this, too. Your Allis-Chalmers dealer has machinery for every earth-moving job. He will demonstrate the machine of your choice on your job. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Look ahead... *move ahead* ...and stay ahead with **ALLIS-CHALMERS**

For more facts, use Request Card at page 18 and circle No. 248

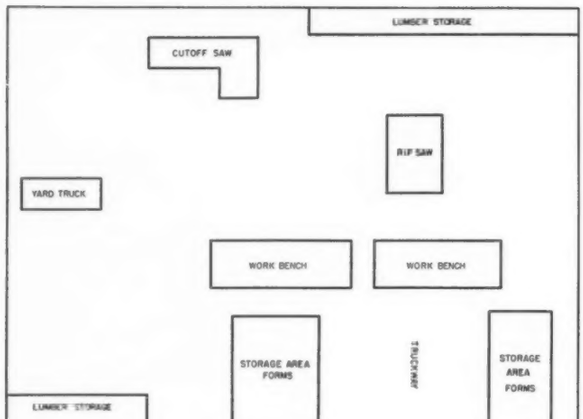


Figure 2.

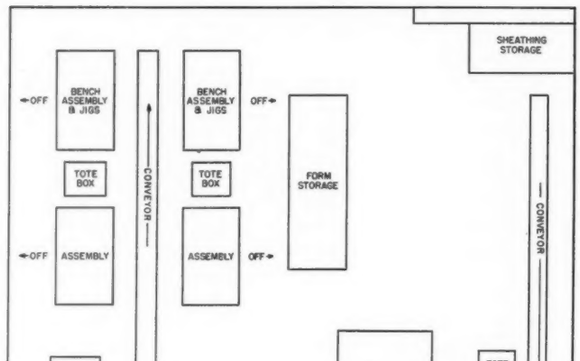
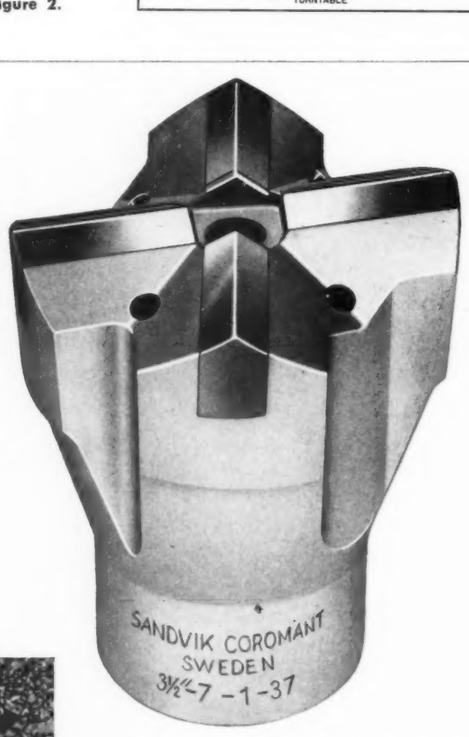
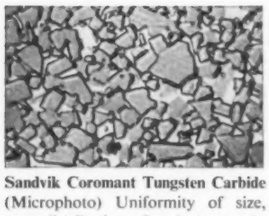


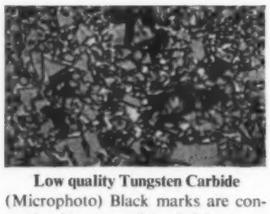
Figure 3.

Longer bit life— with *new* Sandvik Coromant Bits





Sandvik Coromant Tungsten Carbide (Microphoto) Uniformity of size, even distribution of grain are marked. Free from porosity and impurities —therefore stronger, longer-lived.



Low quality Tungsten Carbide (Microphoto) Black marks are contaminations caused by deficient production control. They weaken the carbide, reduce its working life.

Sandvik Coromant Detachable Bits are Available in the following Thread Sizes and Bit Diameters

Type	Thread	Available Diameters, in Inches														
		1⅜	1½	1⅝	1¾	1⅞	2	2⅛	2¼	2⅜	2½	2¾	3	3½	4	4½	5
SHOULDER	F	x	x														
	113	x															
	H		x	x	x	x											
	115		x	x													
	D					x	x	x	x	x	x	x	x				
	K												x	x	x	x	
BOTTOM	1" Rope			x	x	x											
	200			x	x	x											
	1¼" Rope					x	x	x	x		x		x				
	400						x		x		x						
	1½" Rope										x	x	x	x	x		
	600										x	x	x	x			
	700												x	x			
	J. 7.5														x	x	
	2" Rope													x	x	x	x

NEXT time you buy bits, specify Sandvik Coromant because they give more footage per bit, lower drilling costs. Here's why:

1 Only first-quality tungsten carbide is used —as shown in the microphotos above. This means less wear, longer life and a better job.

2 The bodies are precision-made of high quality alloy steel—tough enough to take the strain throughout the extra-long bit life.

3 The bigger Sandvik Coromant bits are all of X-design, which prevents rifling. No wonder Sandvik Coromant inserts are the most widely used in the world, drilling more than one billion feet every year.

SANDVIK COROMANT bits are supplied through Atlas Copco, the world's largest manufacturer of rock drills, who also supply Sandvik Coromant integral steels — the most widely used in the world — and Sandvik Coromant extension steel equipment.

Write or phone today for further details to either of the addresses below:

610 Industrial Avenue
Paramus, New Jersey
COlfax 1-6800

Atlas Copco

930 Brittan Avenue
San Carlos, California
LYtell 1-0375

For more facts, use Request Card at page 18 and circle No. 249

(Continued from preceding page)

compiled about the site and the surrounding area. On large work, the project manager should appoint an inspector to make certain that equipment is at the proper location.

All equipment, if possible, should be located in the best position for access to existing roads and railroad tracks. Drainage conditions should also be checked to assure that the equipment will not be in mud holes during rainy seasons.

When shop facilities are set up, similar machines should be grouped together. Machines that require the same type of servicing equipment and utilities should be as near together as possible to lower installation costs. There should be sufficient lighting, either natural or artificial, for all machines or work areas.

Thought should be given to mechanical control. From the contractor's point of view, mechanical control reduces or eliminates attendants and operators, creates and maintains the proper sequence of operations, and reduces mistakes and errors in overloading equipment.

Plant costs

Usually, plant and equipment costs include only the items of construction plant, transportation, erection, and installation. The costs may be summarized on a form, Figure 5, if they are not carried as separate items in the overhead accounts. Or, after the cost engineer or analyst has checked production and analyzed methods used in an attempt to lower costs, the results will have to be summarized and recommendations made for improved methods.

In summarizing the findings, which are reduced to dollars and cents, the superintendent or project manager will be able to interpret the results and authorize corrective action, if it is needed. The main factors to be presented and considered can be reported on a standard form.

Weather conditions

No planning for construction operations is complete without taking weather conditions into consideration, since, in many cases, the weather can make or break a project. Planning for the weather should

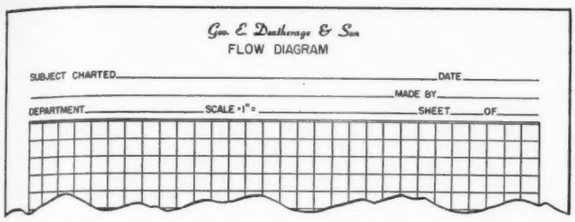

Geo. E. Dunhenage & Son
FLOW DIAGRAM
SUBJECT CHARTED_____ DATE_____
MADE BY_____
DEPARTMENT_____ SCALE 1"= _____ SHEET_____ OF_____

Figure 4.

CONSTRUCTION PLANT & EQUIPMENT COSTS
CONSTRUCTION PERIOD____DAYS____MONTHS
ESTIMATE NO._____
PLANT & EQUIPMENT CHARGES
SUMMARY SHEET_____
Date_____ By_____

P&E REF NO.	Descrip. of Charge	Total	Dist. of Cost Labor	Material Supplies & Equip.	Estimated Salvage on Completion
1	Temp. Camp & Office Expense				
2	Access Roads-Bridges-Trails				
3	Admn. Bldgs. - Guest Houses				
4	Office Equip. & Furnishings				
5	Camp Bldgs.- Furn. & Equip.				
6	Work Signs - Barricades-etc				
7	Field San. &Drnk. Water Unit				
8	Wareh&-Shop Bldgs-Store Rms.				
9	Shop Tls., Equip., Install.				

Figure 5.

start at the estimator level, with money allowed in the job overhead to take care of rescheduling and re-planning.

In northern states, provision will need to be made for winter conditions. In extreme southern areas, provision must be made for periods of extreme heat, in which concrete sets up much faster and needs extensive protection and curing. Figures on mean temperatures and average rainfall in any area can be secured from the U. S. Weather Bureau.

For the purposes of close job control, experience points to a 2-day forecast as most useful for light construction and a 5-day forecast for heavy construction.

Rescheduling operations becomes necessary whenever weather interferes with normal operations. On small operations this is not difficult, but it presents some problems on larger jobs. Usually, the problem of maintaining the work schedule is not as important as getting unproductive workmen off the payroll during inclement weather. On most jobs, time lost can be made up, but money spent for unproductive work is gone forever.

A certain percentage of the men can be diverted to productive work inside or at outside areas where the weather does not interfere much with production, but this percentage is usually limited. Whenever men are re-allocated to other work, time is lost in making tool and equipment setups for short periods. As a general rule, re-allocating outside men to inside work for these short periods is not economical.

Inclement weather of any kind, over any extended period, will require the rescheduling of work planned in the progress schedule, and this information should be passed on to all parties connected with this particular work.

There cannot be any set rule about what to do in bad weather, but advance forecasts, which are 85 per cent accurate, are a tremendous advantage in controlling the work in the field, particularly on a day-to-day basis. If work is forced to close down, the main steps to be taken are to protect the materials—both in place and ready for installation; get the men off the payroll as fast as possible; and make plans for the next shift so that immediate top production can be secured at starting time.

Cost indexes

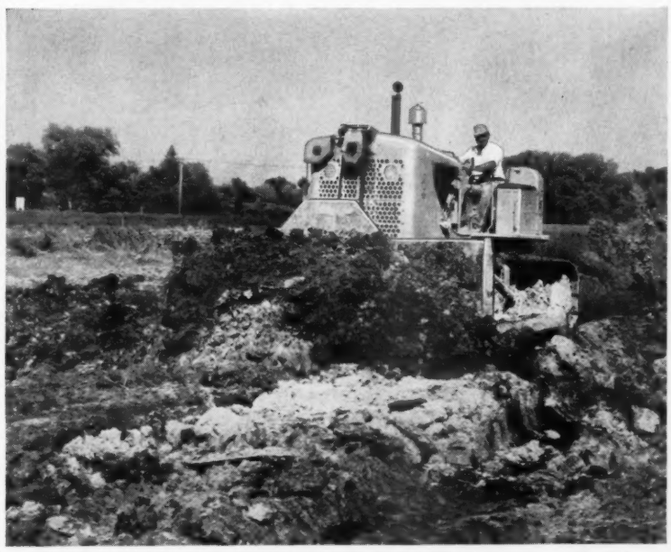
Cost indexes, sometimes called price indexes, are numbers indicating relative costs or prices at differ-

(*Continued on next page*)

His Allis-Chalmers "Dozers" spearhead levee job

Sweetman Construction Co. is building a levee near Sioux Falls, South Dakota—moving nearly one million yards of earth to end costly spring flooding of the Sioux river. Supt. William Bruhn and his spread of Allis-Chalmers HD-16 tractor-dozers spearhead the job. Bill and his operators think highly of the HD-16's. After months of heavy dozing, the tractors maintained a perfect "stay-on-the-job" record.

William Bruhn, Supt.
Sweetman Construction Co.
Sioux Falls, South Dakota



Allis-Chalmers tractor-dozer grades fill on levee. With hydraulic-controlled steering, the big, sure-footed HD-16 handles easily in heaviest material.

148-hp HD-16's handle big-tractor jobs with ease

The two-mile Sioux Falls levee job involves straightening and deepening the river bed—actually shifting the channel three quarters of a mile. Nearly one million yards of earth will be moved to excavate the channel and build the embankment.

Dependable Allis-Chalmers HD-16 tractor-dozers are spreading scraper-hauled fill, heaping muck for the dragline, leveling haul routes—setting a fast pace for other machines wherever they work.

Hydraulic steering a big help

Operators like the way they handle—the sure "feel" of the controls. Hydraulic-controlled steering takes the hard work out of maneuvering, even in the toughest dozing.

The HD-16's big, 148-hp Allis-Chalmers diesel engine delivers plenty of torque to lug through on heavy dozing—lively performance under all job conditions.

Easy servicing pays dividends

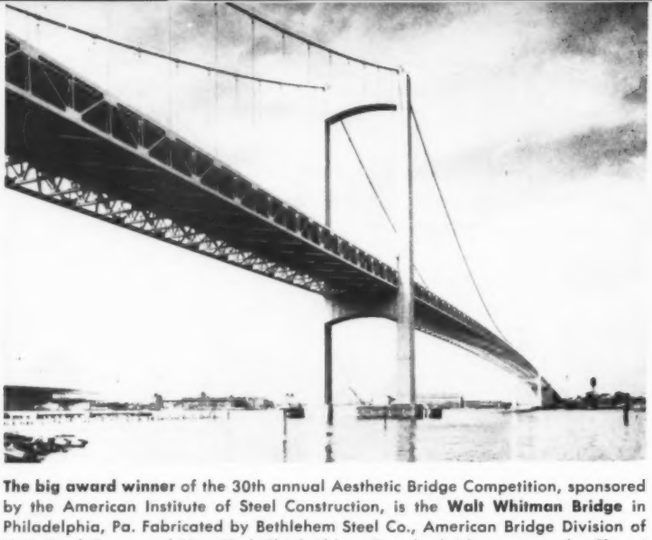
Like all Allis-Chalmers crawler tractors, the HD-16 requires lubrication *only once every 1,000 hours* for truck wheels, idlers and support rollers. This means a bonus of hundreds of production hours—a feature that pays dividends on anybody's job.

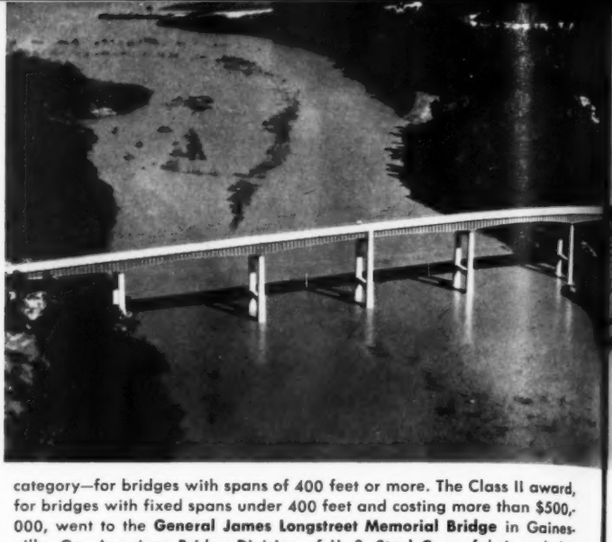
See what this great tractor can do for you! Six models to fit your needs. 148-hp, all-gear drive, 150-hp with hydraulic torque converter. Bare weight is approximately 33,000 lb. Ask your Allis-Chalmers dealer to demonstrate on your job. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Look ahead... *move ahead* ...and stay ahead with **ALLIS-CHALMERS**

For more facts, use Request Card at page 18 and circle No. 250

Construction camera





The big award winner of the 30th annual Aesthetic Bridge Competition, sponsored by the American Institute of Steel Construction, is the **Walt Whitman Bridge** in Philadelphia, Pa. Fabricated by Bethlehem Steel Co., American Bridge Division of U. S. Steel Corp., and New York Shipbuilding Co., the bridge won in the Class I category—for bridges with spans of 400 feet or more. The Class II award, for bridges with fixed spans under 400 feet and costing more than $500,000, went to the **General James Longstreet Memorial Bridge** in Gainesville, Ga. American Bridge Division of U. S. Steel Corp. fabricated this span, v does no the Han spans u

TOUGH

...and built to prove it!

Hendrix Lightweight DRAGLINE BUCKETS

The rugged construction of Hendrix Dragline Buckets in all types makes for trouble-free, consistent performance. No matter what the working conditions, Hendrix Buckets can "take it" and come back for more!

"A Type for Every Digging Purpose"...
¼ to 40 Cubic Yards—Perforated or Solid

HENDRIX MANUFACTURING COMPANY, Inc.
MANSFIELD, LOUISIANA
For more facts, use Request Card at page 18 and circle No. 251

(Continued from preceding page)

ent times or periods. Costs are usually expressed as a percentage of some cost or price for a stated period, given as 100 per cent.

An index may be made for a major class of items such as for heavy construction, buildings, or highways; or a single item such as reinforcing steel, labor, or materials of any class for which there is an established market.

An index can be highly useful in estimating the cost of a current project, and it can also be very dangerous. When indexes are used, they should be those which are limited to the class of work being done. For instance, it is not advisable to apply the index on general increases in labor and material costs to a highway job, if indexes are available for that specific class of work.

Even if a highway index is used for a current highway job, it is not too good a check without allowing for the differences that are bound to occur between the class of pavements covered by the index and those used on the current job. Good judgment must be used in allowing for these differences.

To substitute index figures for a detailed estimate would be very foolish. All indexes are approximations, and the lack of detail increases the danger of overlooking special factors.

When a detailed estimate is made, the best and quickest check can generally be made against a historical cost on similar work. This is ordinarily limited to current jobs. Jobs of a similar nature, but many years old, may be ruled out on account of age, but the judicious application of cost index will also make these available. If the estimate fails to compare favorably against a historical cost or a cost index, it should be checked again. If it checks within practical limits, the detailed estimate is acceptable.

Like cubic-foot cost or square-foot cost, construction indexes and historical costs are mainly for use in checking summarized figures.

(Next month's article will deal with "Clerical organization: Bookkeeping".)

Denton nation

Recon and in being made. Constru ord by ment i Constru 6,029 f gust da

Both tors—S naw an a 12½-I 24-foot- Denton powered 4-71 en plant, p generat 10-cubic

Dento a 9-mile of Dun over-all way int from th Mich.

Sarge in tand Route 1 Battle C the Det

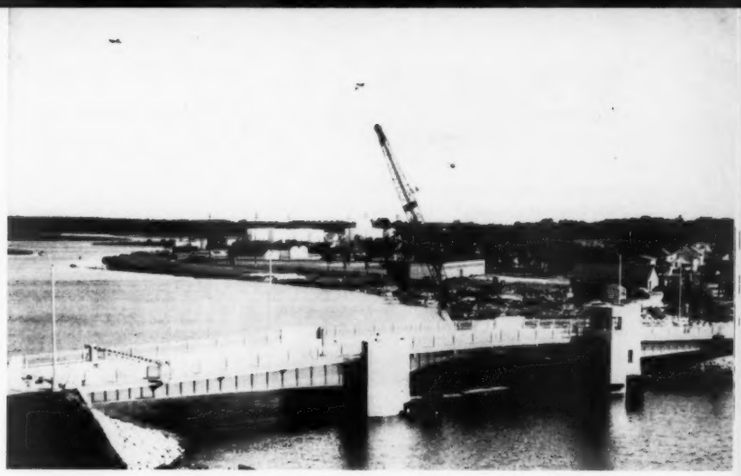
Enviro discus

The p tary an theory s commun is emph Sanitatio Jr. The structure tion det structure

Empiri thumb, a plied wh in illustr job can particula and dr plates, a

The $ John Wil Ave., New

span, which gained the judges' approval "because of its sensitive design which does not interfere with its natural setting". "The clean looks and graceful arch" of the **Hampton Road Overpass** won this bridge the Class III award for bridges with spans under 400 feet and costing under $500,000. Fabricated by Mosher Steel,



the overpass is on the Dallas-Fort Worth Turnpike at Dallas, Texas. The Class IV award, for bridges with movable spans, went to the **Madison-Monroe Street Bridge** at Two Rivers, Wis. The bridge, fabricated by Lakeside Bridge & Steel Co., impressed the jury with its pleasing balance between horizontal and vertical lines.

Denton Construction sets national paving record

Records are made to be broken, and in these days paving records are being broken as fast as they are made. No sooner had the Sargent Construction Co. set a national record by laying 5,787 feet of new pavement in one July day than Denton Construction Co. upset it by laying 6,029 feet of pavement in an August day.

Both of these Michigan contractors—Sargent headquarters in Saginaw and Denton in Detroit—worked a 12½-hour period on a 9-inch-thick 24-foot-wide concrete pavement. Denton had three Rex pavers, each powered by a General Motors diesel 4-71 engine, a Butler portable batch plant, powered by a GM diesel 100-kw generator set, and 17 tandem-axle 10-cubic-yard trucks.

Denton's $3,111,680 contract was a 9-mile section of new U. S. 23, south of Dundee, Mich. It is part of an over-all program to widen the highway into a four-lane express route from the Ohio state line to Standish, Mich.

Sargent, which used three pavers in tandem, worked on Interstate Route 12 in Calhoun County, near Battle Creek. This route is part of the Detroit-Chicago expressway.

Environmental sanitation discussed in new book

The practical application of sanitary and public-health engineering theory and principles to the small community, installation, or facility is emphasized in "Environmental Sanitation", by Joseph A. Salvato, Jr. The book includes design, construction, maintenance, and operation details of small plants and structures.

Empirical formulas, rules of thumb, and sound judgment are applied where they are advantageous in illustrating how the best possible job can be accomplished under the particular circumstances. Examples and drawings, including design plates, are used freely.

The $12 book is available from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

Dozes earth in summer

During Alaska's comparatively few weeks of summer, Geraghty's HD-6 works on road construction, clears homesites, digs basements, and landscapes. The tractor-dozer has plenty of power for these jobs.

Clears snowbound supply lines in winter

Through the long winter months, many families near the city and back in the bush are snowbound. They depend on Geraghty to keep roads to food and supplies open. His snow-clearing jobs range from a quarter mile to a full mile of road. Here's why Geraghty calls the HD-6 the best tractor we've ever owned.

Geraghty's HD-6 starts easily on the job site . . . is ready to work in a few minutes. Sure-fire, dependable direct electric starting right on the job saves from 5 to 10 gallons of fuel per month during the cold stretch.

Another reason for the increased production of Allis-Chalmers crawlers is the long lubrication intervals made possible by Allis-Chalmers design. There is no need for Geraghty to fight frozen earth to get at grease fittings—because the truck wheels, idlers and support rollers on his HD-6 need lubrication only once every 1,000 operating hours.

The advantages that Geraghty enjoys on the HD-6 are part of every Allis-Chalmers tractor-dozer. Models for every application range from 66.5 net hp to 225 net hp. Your Allis-Chalmers construction machinery dealer will be glad to demonstrate the machine you need on your job. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wis.

He increased production 20%

with an Allis-Chalmers tractor-dozer

Clyde Geraghty's Allis-Chalmers tractor-dozer really pays off in Alaska's semi-arctic conditions. The day-by-day dependability of his 66.5 net hp HD-6 makes 20 percent more operating time available.

Mr. Clyde Geraghty, President, Mitchell Truck & Tractor Service, Inc., Fairbanks, Alaska.

Summer in Alaska finds Geraghty pioneering roads, clearing homesites . . . during winter he uses his Allis-Chalmers tractor-dozer to keep vital supply lines free of snow.

Look ahead... *move ahead* ...and stay ahead with **ALLIS-CHALMERS**

For more facts, use Request Card at page 18 and circle No. 252

Labor review

Toronto construction comes to standstill as cement masons strike

Work on major construction projects in Toronto, Canada, was brought to a standstill as building trades unions honored picket lines thrown up by cement masons striking for union shop and eight-hour-day provisions in a new contract.

The union and building trades employers were in off-and-on negotiations after the expiration of their agreement last April. Tentative agreement was reached during the summer on a 25-cent hourly wage increase spread over two years, but the amount of the installments was not specified. With negotiations dragging out, retroactivity was seen as becoming an issue in the settlement.

Three crafts accept Sabine Area contract pattern

Pile drivers, millwrights, and ironworkers in Texas' Sabine River Area voted to go along with a 3-year 40-cent contract pattern previously accepted by the operating engineers.

The contracts between the unions and the Sabine Area Constructors Association called for an immediate 15-cents-an-hour wage boost; another 7½ cents on April 1, 1959; 5 cents on October 1, 1959; and 12½ cents on April 1, 1960. The agreements expire on March 31, 1961. The deferred 7½-cent increase, set for April, 1959, will be channeled into a health-welfare fund by the ironworkers, according to a management official, with the other unions adding the increase to pay scales. Old rates were $3.12½ for pile drivers, $3.25 for millwrights, and $3.32½ for ironworkers.

Welfare Fund Conference held in New York draws 500 participants

Some 500 health, welfare, and pension fund officers, mainly from the construction industry, attended the 1958 Workshop run by the National Conference of Health and Welfare Plans Trustees and Administrators in New York City.

The three-day meeting—an annual affair sponsored by the National Conference—was entitled, "An Advanced Course in Health and Welfare Fund Management", and all phases of fund management were covered in separate panel discussions that dealt primarily with specific problems confronting the delegates.

Four Tulsa crafts take 15-cent hike in 9-month contract

Four striking building trades unions settled with Tulsa, Okla., contractors for a new 9-month contract raising wage rates 15 cents hourly.

New rates for each craft are as follows: carpenters, $3.17½; cement finishers, $3.32½; laborers, $2.15; teamsters, $2.20. The agreement expires on June 1, 1959.

Carpenters walked off the job on the expiration of their old contract, September 1, and were followed a week later by the other unions. The operating engineers, also on strike, were expected to accept the same settlement. All five crafts agreed last spring to 90-day extension of contracts that would have expired last June 1.

Court order halts picketing at Maine housing project

The U. S. District Court in Maine issued a temporary injunction to halt picketing at a Bangor housing project by Operating Engineers Local 4, on the basis of a National Labor Relations Board officer's complaint that the union was conducting a secondary boycott.

The Bangor Building Trades Council, which sanctioned the operating engineers' action, and Laborers Local 1377, which joined in the picketing, are also subject to the order. The unions voluntarily ceased picketing and went back to work, pending the court's decision, when NLRB acting regional director Robert E. Green petitioned for the temporary injunction.

Federal Judge J. Gignoux first granted Green's request in a bench ruling "in view of the urgency of this proceeding". The strike had brought to a standstill the construction of an $8 million housing project at Dow Air Force Base.

In his oral statement, Judge Gignoux said that Green had "reasonable cause" to believe that the unions struck Davison Construction Co., the prime contractor, to force it to cease doing business with J. R. Cianchette, a subcontractor employing nonunion labor. The operating engineers local contended that its contract with Davison required the employment of building trades union members throughout the project—a defense which Judge Gignoux said was invalidated by the U. S. Supreme Court's "hot cargo" ruling.

McCARTHY AUGER DRILLS . . . . . for EVERY PURPOSE

Heavy-Duty Vertical auger drill gives you more profit per job by drilling from 3 to 24 in. diameter holes 400-800 ft. per day.

Trench-type auger drill speeds pipeline work by drilling under roads, RR beds; readily equipped with pipe-pusher.

These two McCarthy Auger Drills speed work and cut costs in a variety of contracting jobs — blast hole, foundation and deep post hole drilling, dewatering, exploration; and underground pipeline installation. Bid lower, work faster and profit more with these two great McCarthy Auger Drills. Contact your nearest representative or write direct for Bulletin M-100 (vertical) and Bulletin M-107 (trench-type).

Manufacturer of Drilling Equipment Since 1901

THE SALEM TOOL CO.

806 S. ELLSWORTH AVE. • SALEM, OHIO, U. S. A.

For more facts, use Request Card at page 18 and circle No. 253

SERVICE FOR YOUR B&D TOOLS

For genuine Black & Decker repairs check Yellow Pages under "Tools-Electric" for address of nearby Black & Decker

FACTORY SERVICE BRANCH

Free tool inspection when requested • Genuine B&D parts used • Factory-trained technicians handle all work • Standard B&D Guarantee at completion of recommended repairs • Fast service at reasonable cost.

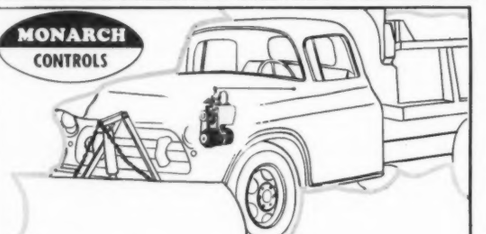
Or write for address of nearest of 48 branches to: THE BLACK & DECKER MFG. CO., Dept. S3611, Towson 4, Md.

Black & Decker

QUALITY ELECTRIC TOOLS

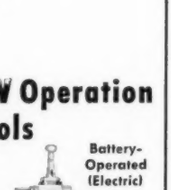
For more facts, circle No. 254

MONARCH CONTROLS



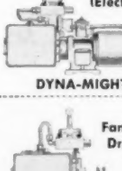
Automatic SNOW PLOW Operation with MONARCH Controls

One man lifts or lowers the snow plow automatically from the cab . . . with MONARCH Power Hydraulic Controls. More than 50,000 installations. Simple to install. Write for full details or see your dealer.



Battery-Operated (Electric)

DYNA-MIGHT



Fan-Belt Driven

HY-LO-JACK & HY-LO-JEEP

MONARCH ROAD MACHINERY COMPANY

1331 Michigan St., N. E. — Grand Rapids 3, Michigan

For more facts, circle No. 255

Names in the news

Elmo R. Morgan, director of highways for the Utah State Road Commission.

Utah appoints Morgan director of highways

Elmo R. Morgan has been appointed director of highways by the Utah State Road Commission, to succeed Ellis L. Armstrong, new commissioner of the Bureau of Public Roads.

Prior to his appointment, Morgan was business vice president of the University of Utah. During World War II, he was with the U.S. Army Corps of Engineers. Subsequently, Morgan was deputy manager and field manager for the U. S. Atomic Energy Commission, Los Alamos, N. Mex.

McGraw names Dubose for Hartford project

Charles Dubose, internationally known architect, has been engaged for the master planning and design of Hartford's Front-Market Street redevelopment project by F. H. McGraw & Co., New York City, developers of the site.

Formerly an executive for the McGraw company in Montreal, Dubose will serve on the redevelopment project as an independent architect, with private offices in Hartford.

Pennsylvania Highways names research director

Cyril D. Jensen has been named director of research and testing for the Pennsylvania Department of Highways. Jensen, who has been granted a leave of absence from Lehigh University to accept the post, is professor of civil engineering and chairman of the soil mechanics division of Fritz Engineering Laboratory at the university.

John Patton has been appointed a right-of-way engineer 1 in the office of District 6 at Haverford, by the Pennsylvania Department of Highways. Patton was formerly associated with the U. S. Bureau of Public Roads in Pennsylvania.

Ohio Highways names traffic bureau chief

Fred C. Tarbox has been appointed chief of the Ohio Department of Highways Traffic Bureau to succeed the late Harold Eckhardt. Tarbox, who has more than 15 years' experience in the field of traffic engineering, will be in charge of design and construction of road signs and the installation of traffic-control devices.

For more facts, circle No. 257→

Eliot Farley, Jr., executive vice president of Perini Corp.

Perini Corp. elects executive vice president

Eliot Farley, Jr., has been elected executive vice president for administration and finance of Perini Corp., Framingham, Mass. Farley, who was also elected to the board of directors, will supervise the company's new program of diversification through land development, and acquisition of manufacturing and other industrial enterprises.

Farley is presently president and treasurer of American Anodizing Corp., Quincy, Mass., and executive vice president and treasurer of U. S. Gear Corp., Wakefield, Mass.

CIB elects officers

New officers and a board of directors have been elected by the Concrete Industry Board. George N. Cohen is president; Nelson L. Doe, vice president; William J. McIntosh, secretary; and Dugald J. Cameron, treasurer.

The board of directors includes Roger H. Corbetta, Ingram S. Carner, Emil Praeger, Bruno Caneva, George P. Dorrance, H. E. Tear, D. J. Cameron, M. J. McMillan, Anthony Pope, and Jesse R. Wingerter.

Rowe named chairman of construction committee

Fred I. Rowe has been appointed chairman of the Committee on Construction and Civic Development of the Chamber of Commerce of the United States. Rowe, who will serve a one-year term on the committee, is a partner and general manager of W. L. Johnson Construction Co. & Associates, Columbus, Ohio.

Holmes & Narver promotes

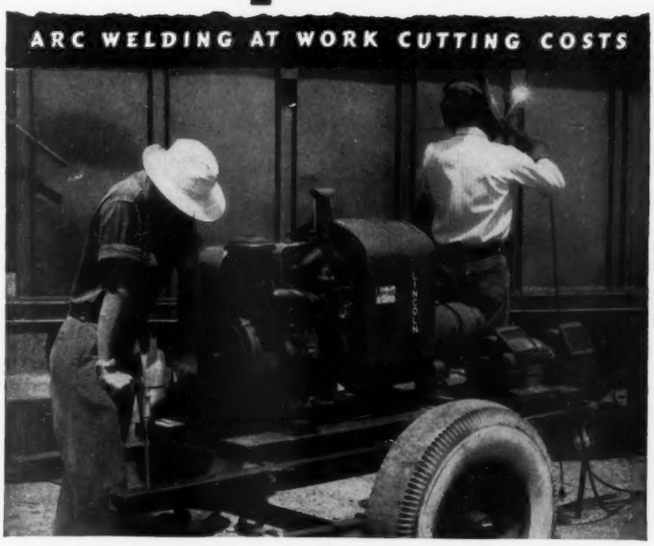
Robert A. Williamson and Harold Soliday have been promoted to chief structural engineer and chief electrical engineer, respectively, by Holmes & Narver, Inc., engineers and constructors of Los Angeles, Calif. The new positions give the two men review privileges on all engineering designs of the firm's divisions.

Ebasco Services news

Ebasco Services Inc., management consulting, engineering, and construction firm, New York City, has opened an office in Milan, Italy. Heading the new office is Arnold R. Beardsley.

Frederick C. Tonetti has been appointed assistant director of research by Ebasco. He has been a member of the firm for the past 23 years.

Weldynamics



Portable power plant saves time and money for builders

Weldanpower furnishes 5KVA 115/230 volt AC, 60 cycle power and 200 amps AC welding current.

How often have you needed electric power on a job before commercial lines were available? Weldynamics bring you low cost, easy-to-use power in the form of Weldanpower.

Weldanpower generates 5KVA of 230 and 115 volt power and 200 amps welding current with one machine. It's the answer to the contractor's power problems. Lightweight, compact, easily trucked from one job to another, Weldanpower packs a lot of punch!

IT'S A WELDER TOO!

As a 200 ampere welder, Weldanpower is always ready to make on-the-spot repairs or work on construction—and you can run lights and equipment while welding.

Get the facts on how you can cut costs with Weldanpower. Write for Bulletin SB-1339.

The World's Largest Manufacturer of Arc Welding Equipment

LINCOLN

THE LINCOLN ELECTRIC COMPANY • DEPT. 5325 • CLEVELAND 17, OHIO

For more facts, use Request Card at page 18 and circle No. 256

ELIMINATE REPEAT MAINTENANCE JOBS!

Repair It Right with KOTAL

PROCESSED, ALL WEATHER, INSTANT USE

BITUMINOUS STOCKPILE MIXES!

End those double and triple cost repair jobs right now! — jobs done with inferior mixes require constant checking and repeat repairs. Maintenance with Kotal Stockpile Mixes are one step — permanent — operations.

Use KOTAL PROCESSED BITUMINOUS MIXES for:

- DRIVEWAYS
- PARKING LOTS
- STREETS
- STATION PLATFORMS
- GAS STATIONS
- PLAYGROUNDS
- OTHER PAVING REQUIREMENTS

ECONOMICAL . . .

TIME SAVING . . . LABOR SAVING

Write for full details today

KOTAL Company

Three spreads use different methods on Oahe spillway job

One method accounted for about 9,000 yards of material moved per 10-hour shift. The Euclid loader, pulled by an International TD-24 and an Allis-Chalmers HD-21, is slicing the edge of a 3-foot cut and carrying the material up a 54-inch belt to load Euclid 25-yard bottom-dumps.

A powerful team of earthmovers ripped and gouged their way through tough shale to cut out a hundred thousand cubic yards per day from the spillway channel of Oahe Dam near Pierre, S. Dak.

In the 200-foot-deep cut, a wide variety of equipment was put to test. Tractor-mounted rippers tirelessly plowed through the hard shale to break it up and allow it to weather. Sheepsfoot rollers then broke down the big chunks.

Rigged like two work horses pulling a plow, two tractors strained at the bit to pull a belt loader along the edge of a 3-foot cut. The scraperlike mouth of the loader bit off the side of the cut, and material was carried up the belt and into bottom-dump wagons. In one of the two 10-hour shifts, the Euclid loader ate through about 9,000 cubic yards of tough shale.

In the giant cut, there was plenty of room for a couple of hard-working P&H 4-yard shovels. Production on firm shale ran about 8,000 yards per 10-hour shift.

A crowd of scrapers also kept busy moving their share of the dirt. Some 20 Euclid and Caterpillar scrapers loaded out the shale that had been ripped and weathered.

The moving of the 18.6 million cubic yards of material for the $5.7 million contract for Stage II of spillway excavation was done by a joint venture of J. H. Beckman Construction Co., Sioux Falls, S. Dak., and Guy H. James Construction Co., Oklahoma City, Calif. The final stage of spillway excavation, calling for 7.4 million yards to be removed, is part of the Stage VI earthwork contract. (See also "Earthmoving Rigs Roll in High Gear on Oahe Dam Project", page 78.)

Although the excavation of the spillway channel was a tremendous job, it is dwarfed by the over-all size of the dam. At Oahe Dam, second largest earth-fill dam in the world, figures in the millions are handed out as casually as coffee in a construction shack. Only after six zeros have been added do figures become significant. During 1957, for example, the U. S. Army Corps of Engineers awarded over $28 million in construction contracts on the multi-purpose dam.

Figures on the size of this Missouri

These International TD-24 Tractors are working on a connection between the New York and New England Thruways. According to their owner's they've given uninterrupted service since delivery in May, 1956.

9 torque converter equipped TD-24'S show endurance on huge N. Y. highway job

The immense job involved some 1,270,000 cubic yards of earth and rock excavation, 22 bridge structures and 11.93 miles of pavement for the connection between the New York and New England Thruways. The $13,572,000 contract went to two prominent New York contractors, Rusciano Construction Corp. and Del Balso Construction Corp. And the really tough jobs were handled by nine International TD-24 Tractors equipped with torque converter drives.

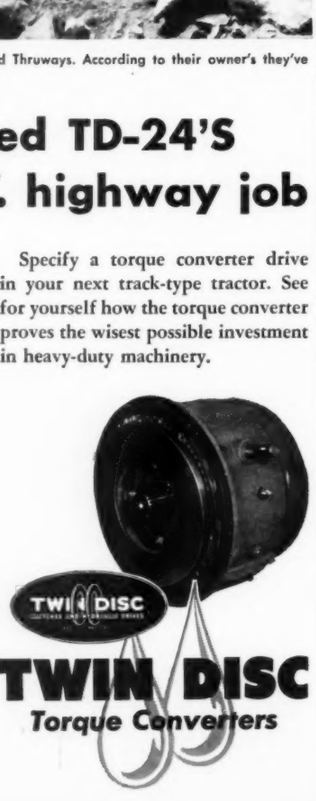
"Availability" was the key to profitable machinery operation on this project. And as both contractors pointed out: "Each of these nine TD-24's has given us continuous and uninterrupted service since delivery in May, 1956."

The torque converter multiplies engine torque up to 6:1 . . . permits the engine to deliver maximum horsepower whenever required . . . automatically matches power to load demands . . . and instantaneously matches tractor speed to scraper travel, for faster loading and less shock between the machines.

With a torque converter drive, gear-shifting is minimized or eliminated, for higher operator efficiency and less fatigue. Load pick-up is smooth and even, without clutch slippage. Shock loads and vibrations are cushioned out, for longer tractor life and less maintenance.

All three of the "big three"—Allis-Chalmers, Caterpillar and International offer torque converter drives as standard or optional in certain tractor models. And all three standardize on Twin Disc Torque Converter components for their torque converter drives.

Specify a torque converter drive in your next track-type tractor. See for yourself how the torque converter proves the wisest possible investment in heavy-duty machinery.



TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division), Rockford, Illinois

For more facts, use Request Card at page 18 and circle No. 258

◄ A second method accounted for the bulk of the spillway excavation at Oahe Dam. Ripped shale is being picked up by two Cat DW21's. The one in the background is pushed by a Cat D9; the one in the foreground is pushed by an Allis-Chalmers tractor with single-tooth ripper.

A third method had shovels loading bottom-dump units. An experimental model of the International bottom-dump Pay-wagon is loaded by a P&H 1055 shovel. ►

River dam are also staggering. Its 9,300-foot-long and 242-foot-high embankment will contain about 91 million cubic yards of compacted earth fill. Its reservoir will extend upstream about 250 miles.

Channel work

The spillway channel, to be in use only during excessively high water, takes a 4.3-mile course in a wide sweep around the west abutment. Some 30 million cubic yards of earth had to be excavated to form the upper 12,300 feet of channel. On the lower section, water will follow a natural drain for about 4,000 feet, and then be guided back into the Missouri by a 6,500-foot-long pilot channel.

At about a quarter of the distance from the inlet of the channel, a controlled, gated spillway structure of concrete will pass flows up to 319 cfs. Originally, the spillway was planned to be at about the mid-point of the channel, but engineers found they could save 30 million cubic yards of excavation by moving the spillway upstream.

It was also decided to save money by letting the forces of nature do some of the excavation below the crest of the spillway. At this time, only the upper gated section of the concrete spillway will be built, leaving the chute and barrel sections to be constructed later, if required. It is thought that erosion from occasional overflow flood releases will carve out the shale below the crest of the spillway, saving much expensive excavation.

In places, the approach channel to the spillway is large enough to be mistaken for the main channel of the Missouri River. At the upper end, the spillway channel is, at its maxi-

(*Continued on next page*)

A Euclid belly-dump, one of a fleet of eight loaded by shovels, dumps in the waste area near the river.

Mack Model LVX—22½-ton payload rear dumper.

Mack Model LRX—15-ton payload rear dumper.

Send a man instead of a boy!

Big yardages—smashing impacts—heavy hauls. That's when you need a truck with the guts and go of these famous super-capacity Mack off-highway dumpers. No doubt about it, the man-sized jobs are the Mack-sized jobs.

Check the specs with your Mack representative—but remember, Mack quality begins where specifications leave off. And be sure to ask him about Mack users—names, facts and figures—who are handling their big jobs with these profit-earning big Macks.

Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

For capacities of 30 tons or more where maximum flotation and traction are required, a full line of tandem rear axle Macks is available.

MACK
first name for
TRUCKS

For more facts, use Request Card at page 18 and circle No. 259

The earthmoving fleet is serviced during the lunch break. A pickup with parts, a grease truck, and a fuel truck make up the maintenance vehicles.

A Euclid 8TDT scraper, push-loaded by an Allis-Chalmers HD-21 push-tractor, picks up a heaping load of the broken shale.

out approximately 8,000 yards of the firm shale.

The bulk of the dirt, however, was moved by a powerful fleet of rubber-tire scrapers. The total of 13 scrapers was made up of four Euclid TS-18 2-motor units, four Euclid 8TDT 6-wheelers, and five Caterpillar DW21's. Tractor-dozers used for push-loading as well as ripping included one International TD-24 with an Ateco hydraulic ripper, one Allis-Chalmers HD-21 with a single hook

(*Continued from preceding page*)

mum, over half a mile wide at its top and 200 feet deep. The sides drop down on a gradual 6 to 1 slope to meet a 195-foot-wide bench. From the bench, a 3 to 1 slope drops the level 55 feet to the 472-foot-wide bottom.

Use three methods to move dirt

James and Beckman moved into the job with a variety of earthmoving equipment. Working in different areas of the cut at the same time, scrapers, shovels, and a belt loader moved up to 100,000 cubic yards in two 10-hour shifts. Perhaps the most important part of the operation was the extensive breaking up of the surface with a single-tooth ripper mounted on an Allis-Chalmers HD-21 tractor and an Ateco ripper on an International TD-24 tractor. Sheepsfoot rollers further broke up the big chunks of shale. The material was allowed to weather for several days, until it had crumbled enough to be handled by scrapers or the Euclid loader.

The "Euc" loader was pulled like a plow by an Allis-Chalmers HD-21 and an International TD-24 tractor. The loader sliced off the side of a 2 to 3-foot-deep cut as material was carried by a 54-inch belt to haul units. Hauling the shale from the loader to a waste area were about eight Euclid 25-ton bottom-dumps. In good dirt, the loader picked up about 9,000 cubic yards per day, or 1,000 cubic yards per hour. In the tough shale, the production dropped to about 600 yards per hour.

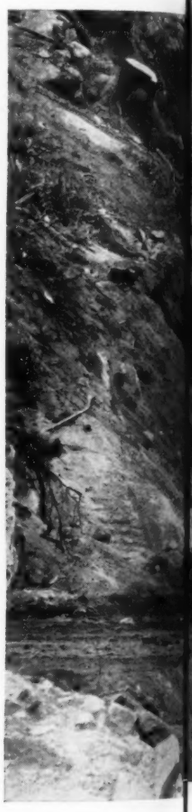
No ripping was required before the two 4-yard P&H 1055 shovels went to work. Digging into a wall about 20 feet high, the shovels loaded into eight Euclid 25-ton belly-dumps and an International Paywagon. During a 10-hour shift, both shovels chewed

This plan drawing of Oahe Dam shows the spillway in the revised position, closer to the mouth of the discharge channel. The upper 12,300 feet of the channel requires excavation of some 30 million yards of earth.

"95" Payhauler® fleet delivers 98.5% availability

highballing rock loads over High Sierra grades

FOR SOUTHERN CALIFORNIA EDISON CO., LOS ANGELES



Mammoth Pool Hydroelectric Project, of Southern California Edison Co., is on the upper San Joaquin river —deep in rock-ribbed, steep-pitched High Sierra country.

It's a job where heavy rock-moving equipment soon reveals what's in it—and behind it—matching power, strength, and positive control against mountain grades, rough haul roads, and high-altitude operation.

Through one measured 12-week period, the 10-unit International Payhauler fleet on this project delivered an amazing 98.5% work availability. Payhaulers are built, throughout, to meet slam-bang, off-road conditions.

For each ton of carrying capacity, a "95" Payhauler has 277 lbs. of main frame steel to give unmatched "backbone" strength. Payhauler semi-elliptic, free-float-

ripper, and two Caterpillar D9 push-dozers.

Working under a subcontract, Ace Construction Co., Omaha, Nebraska, moved 5 million yards of the cut with its fleet of Caterpillar scrapers. After breaking up the shale with a ripper mounted on a D9, the seven DW20 scrapers were able to load out the dirt to waste areas. Two D9's pushed the 6-wheel scrapers.

The Oahe project is headed by J. W. Sibert, Jr., area engineer for the Corps. Charles R. Brown is the assistant area engineer. The resident engineer for the earthwork is L. G. Leavitt.

L. R. Crist is the assistant resident engineer for the earthwork.

For the James and Beckman contract, F. A. Bleecker was superintendent; J. D. Sheehan, assistant superintendent; Richard Loger, grading superintendent; and A. J. Pederson, office manager. THE END

Ace Construction Co., working under a subcontract, handled 5 million yards of the cut with rippers and scrapers. The single-hook ripper on the Cat D9 works far ahead of the DW20's, background, so that the shale can weather.

A Cat DW20 operated by the Ace firm is pushed to capacity by the D9.

New testing laboratory installed by U. S. Steel

A new metallurgical laboratory for testing its alloy, stainless, and special carbon steels, has been installed by the United States Steel Corp., Pittsburgh, Pa., at the firm's Duquesne Works in Duquesne, Pa. The new 25,000-square-foot building houses the process-control, control laboratory, inspection, and research and development units, plus executive offices. The facility is divided into a 2-story office and laboratory wing of 15,000 square feet, and a single-story machine shop, heat-treating, and testing laboratory of 10,000 square feet, serviced by electric overhead traveling cranes. Prior to completion of the new laboratory, testing procedures were conducted in widely separated areas within the Duquesne Works.

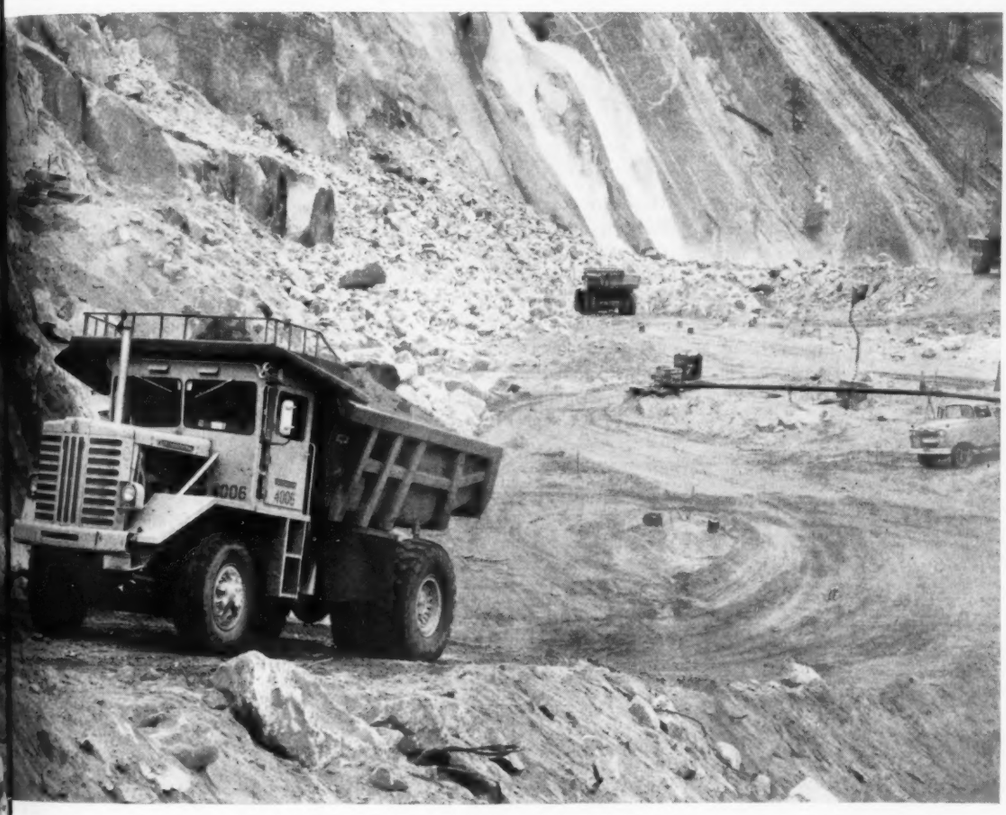
Map shows distribution, origin of U. S. soils

The Civil Aeronautics Administration and the firm of Donald J. Belcher & Associates, Inc., have reprinted "The Origin and Distribution of U. S. Soils", a color map showing the texture and bedrock relationships of soils in the nation. The 30×50-inch map, which had been out of print for the past five years, is designed for photo-interpretation work.

Priced at $2 per copy, the map may be obtained from D. J. Belcher & Associates, Inc., 130 Forest Home Drive, Ithaca, N. Y.

Wisconsin Highway news

William F. Steuber, chief of the public information service of the Wisconsin State Highway Commission, has been promoted to assistant to the chief state highway engineer, E. L. Roettiger. Steuber has been with the department for several years.



"95" Payhaulers are "horsing" their 24-ton rock loads up grades as steep as 18%—on the Mammoth Pool Project! The "95's" Turbo-charged diesel engine develops 335 hp—the 18-ton "65's" is 250 hp!

Here's part of the 10-unit "95" Payhauler fleet parked during noon-hour, that established the amazing 98.5% availability record on Southern California Edison's Mammoth Pool Project!

Two rock-loaded "95's" are on their way—while a third one spots its big-target body for the shovel. Five International Planet-Power steered TD-24's and 12 UD-6 International power units on generators also help make this $50 million job roll!

springs gain extra shock-swallowing support from ra leaves and extra length. Payhauler speeds match ry load and road. And Payhauler exclusive inte-lly-forged full-floating planetary drive axles take torque loads without over-stress.

This extra built-in stamina helps International Pay-lers establish standout availability records. And so s ready availability of parts and service from your rnational Construction Equipment Distributor's stocked bin and well-manned shop—backed by fac-warehouse parts reserves.

how a Payhauler's bonus of Turbo-Charged el power assures you fuel-thrifty, big-load per-ance—even at high altitudes. Watch how power on hauler rear wheels helps deliver top operating effi-cy on steep grades or mucky conditions—even re trailer-type units "spin their wheels." Prove that matic braking safely and positively controls the -loaded "95" downgrade—with little or no foot-e help! See your International Construction Equip-t Distributor for a demonstration!

International Harvester Co., 180 North Michigan Avenue

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

International® Construction Equipment

For more facts, use Request Card at page 18 and circle No. 260

A Euclid 36-yard scraper, one of the fleet hauling impervious material for the upstream part of the Oahe Dam embankment, dumps on the fill.

A Marion 191M electric shovel with 13-yard bucket makes three passes to fill the 50-ton, 32-yard Euclid. Three electric shovels are excavating shale on the right side of the dam.

Earthmoving rigs roll in high gear on Oahe Dam project

A last burst of speed is being made by earthmovers of Western Contracting Corp., Sioux City, Iowa, to finish moving 24.5 million cubic yards of material for Oahe Dam near Pierre, S. Dak., under its $9 million Stage VI earthwork contract. Hitting a high daily production of 100,000 cubic yards by working two 10-hour shifts, the contractor hopes to complete its work by next month.

Field personnel of Western Contracting Corp. have come to call Oahe their home. The dam has been under construction since September, 1948, and the company has held five of the eight prime earthmoving contracts. Including the present work, the contracts total $29 million and involve some 58 million cubic yards of embankment.

Oahe, with 91 million cubic yards of embankment, ranks as the world's largest rolled earthfill dam. Fort Peck Dam on the Missouri in Montana is larger (125 million yards), but its fill was placed hydraulically.

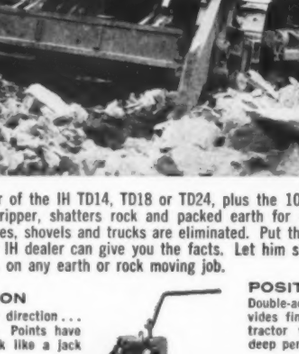
Big Ripper Tackles Tough Rock Jobs

Designed to use full power of IH TD14, TD18, TD20 or TD24

The tremendous power of the IH TD14, TD18 or TD24, plus the 10,000-pound Greenville tractor-mounted rock ripper, shatters rock and packed earth for easy scraper loading. On many jobs explosives, shovels and trucks are eliminated. Put this power-packed team to work for you. Your IH dealer can give you the facts. Let him show you how you can save as much as 25% on any earth or rock moving job.

LIVE SWIVEL ACTION
Shanks swivel 15° in either direction . . . follow tractor like a trailer. Points have live action that shatters rock like a jack hammer.

RUGGED POWERFUL SHANKS
Scientific contour gives extra strength at strain points and pulls points down deep . . . rocks roll out and clear of headframe. Made of tough, heat-treated, manganese-moly steel. Mount one, two or three shanks as needed.



POSITIVE CONTROL
Double-acting hydraulic system provides fingertip control and puts full tractor weight on points for fast, deep penetration.

DRAWBAR TAKES PULL
The ATECO drawbar replaces the tractor drawbar and drawbar brackets. Clevis is accessible with ripper installed.

RIP AT ANY DEPTH
Easily adjusted to permit settings as deep as 24". Points are always at most desirable angle for best penetration and splitting action. Points are easily replaced.

WRITE FOR Greenville Bulletin IH-658. It gives complete data on the Greenville-Ateco ripper.

See it at your International-Harvester Dealer's

GREENVILLE
STEEL CAR COMPANY
ATECO DIVISION
Greenville, Pennsylvania

For more facts, use Request Card at page 18 and circle No. 261

SAVES...time between jobs! ...on equipment!

Model "J" — 10 ton $1250.00*

MILLER *Tilt-Tops' drive on loading!*

Miller's big, oak decked platforms swing down . . . merge with the ground for the easiest . . . fastest *drive on* loading you'll find. With a MILLER Tilt-Top there's no need to bother with skids, cribbing or jacks . . . ONE man can tilt, drive on a rig . . . be off to the next job in less than TWO minutes! This faster, easier loading, plus easier backing and close quarter maneuverability . . . saves the bother and expense of larger more cumbersome trailers . . . so often impractical to use for "fast jump", job-to-job hauling. And MILLER Tilt-Tops' fast between job loading and hauling can often let you shuttle rigs back and forth between simultaneous job operations, help you save duplicating expensive equipment.

Whatever you haul . . . front end loaders, shovels, pavers, rollers or trenchers, there's a MILLER model to handle any rig from 4 to 15 tons, easier! faster! See these time saving, production boosting Tilt-Tops at your MILLER distributor today.

*F. O. B. Milwaukee, Wis. Brakes and optional equipment extra
*Plus 10% Federal Tax

See your MILLER distributor or write for FREE literature to:

Miller Tilt-Top Trailer Inc.
456-L S. 92nd Street, Milwaukee 14, Wisconsin

For more facts, use Request Card at page 18 and circle No. 262

A tractor-mounted drill rig, built by Western, is used to sink 4½-inch blast holes in the shale being used in the dam. The 60-foot tower and hydraulic rotary drill are mounted at the rear of the Cat D8.

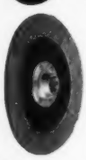
Equipped with two 300-hp engines—one for the front axle and one for the rear—a Euclid, 50-ton end-dump passes the contractor-built pile driver as it hauls gravel to the channel between closure dam and diversion dam. The drill rig is driving the interlocking sheet-pile cutoff wall that runs under the main embankment from abutment to abutment. The 130-foot tower is mounted on a steel frame that rides on rails. Cables from a 3-drum hoist handle piles, jets, and hammer.

The dam will be 9,300 feet long and rise to a height of 242 feet above the river bed. Its reservoir will contain 23,600,000 acre-feet of water and extend 250 miles upstream. The multipurpose dam will provide flood control, irrigation, and electric power for the Pierre region and also for ad-

(Continued on next page)

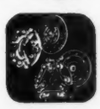
The sheet pile is cut off to grade after it penetrates 5 feet into shale. On both sides of the McKiernan-Terry 10-B-3 hammer are the 120-foot-long hairpin jets that assist in driving. The cutting teeth of the box-shaped spade jet that starts the first 30 or 40 feet of hole are almost at ground level beside the piling.

ROCKFORD



Morlife® whole-ring, powdered-metal-base, clutch plate facing provides smooth, powerful, non-scoring friction contact for heavy-duty operation.

Morlife® button-type, ceramic-and-metal clutch plate facing provides powerful torque grip for use in off-highway, heavy-duty machines.



Small Spring Loaded

Heavy Duty Spring Loaded

Oil or Dry Multiple Disc

Heavy Duty Over Center

Power Take-Offs

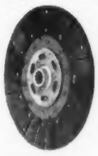
Speed Reducers

How You Can Get the RIGHT FACING For Your Clutches

ROCKFORD CLUTCHES are made with a wide variety of friction plates—to meet your specific needs, exactly. Powdered-metal, ceramic-and-metal, metalic and organic facings provide the *right* torque, wear and heat-disbursal characteristics for every type clutch. Because ROCKFORD engineers have this wide range of facings available, they can help you select just the right friction material to suit your need.

Solid-ring or segmented, metal clutch plate facings provide for use in machines where metal-to-metal friction contact is indicated.

An extensive variety of organic friction facings for all types of clutch plates is available for use with ROCKFORD clutches.



SEND FOR THIS HANDY BULLETIN Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER

314 Catherine St., Rockford, Ill., U.S.A.

Export Sales Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.

CLUTCHES

For more facts, use Request Card at page 18 and circle No. 263

On BIG jobs or SMALL jobs:

Save wire . . . save time . . . increase production with IDEAL Tie Wire Reels!

For re-bars, metal lath, pipe insulation—wherever wire is applied and tied—Ideal Tie Wire Reels permit 6 *to 8 more ties per man per minute* . . . save 25 to 30% in wire . . . compared to dangerous coil-over-shoulder method! Ideal Tie Wire Reels refill in seconds . . . handle 14 through 20 gauge wire . . . end wire waste and speed production on every job! Ask your equipment distributor for the full story and a free demonstration.

. . . OR WRITE US!

Registered U.S. Trademark

IDEAL TIE WIRE REELS

Send me full details on Ideal reels and the tie wire checked below:

☐ Black Annealed ☐ Soft Galvanized ☐ Stainless Steel ☐ Copper Clad ☐ Aluminized

Name .....

Company .....

City ..... Zone ... State .....

IDEAL REEL COMPANY, PADUCAH, KENTUCKY

For more facts, use coupon or Request Card at page 18 and circle No. 264

Working a bank of shale that is being used to build the wide, low-level berms on both sides of the main embankment, a Marion 151M electric dragline uses a 8½-yard bucket to load a Euclid.

Hauling shale to the berm area, a Euclid roars by the concrete inlet structures for the six diversion tunnels.

(Continued from preceding page)

joining states. It is expected that the powerhouse will have two 85,000-kw units on the line by the end of 1962 and that the dam will be completed by 1964. In addition, the dam's 250-mile-long lake will provide navigation and recreational facilities. The powerhouse will contain seven 85,000-kw generating units. Power is expected to be on the line by July, 1962, and completion of the entire project is scheduled for 1964.

Electric shovels excavate

Of the 24.5 million cubic yards of material being moved by Western under this contract, about 5 million cubic yards is shale. Most of this is being dug from the shale banks on the right side of the dam by three Marion 191M electric shovels with 13-yard buckets, one Marion 191M dragline with a 14-yard dragline bucket, and a Marion 151M dragline with an 8½-yard bucket. The draglines are usually used to shape the final slopes in the excavation.

The shovels generally load a fleet of about twenty Euclid 50-ton end-dumps and an equal number of Euclid 25-yard bottom-dumps. Production runs from 80,000 to 90,000 cubic yards per 20-hour day.

In addition to operating this load-and-haul fleet, Western has a fleet of Euclid 36-yard rubber-tire scrapers on the opposite bank from the shovels, hauling impervious material for the upstream portion of the embankment. The material is wetted, processed with scarifiers, and then rolled with Ferguson 50-ton pneumatic units. Ten of the 36-yard scrapers account for about 25,000 yards per day.

Unique rig on blast holes

A unique tractor-mounted drill rig, built by Western, is drilling the 4½-inch holes in the hard shale. The 60-foot drill tower, containing a hydraulic rotary drill, is mounted at the rear of a Cat D8 tractor. By manipulating an extensive system of hydraulic controls, one operator controls all the motions of the drill as well as the action of the tractor.

Cut Paving Costs

with

Maginniss Side Form Vibrators

Maginniss Vibrating Attachment at work on the Ohio Turnpike. Note vibrated concrete near side forms.

Model HPV-3 Hi-lectric paving vibrator—heart of Maginniss side form vibrating attachment.

Fifteen Maginniss side form vibrator attachments are now in use by paving contractors on the Ohio Turnpike.

Mounted on Blaw-Knox and Jaeger spreaders and finishers as well as Heltzel telescoping finishers, these vibrators are reducing paving costs—increasing production efficiency every day!

The Maginniss side form vibrator attachment, easily mounted on machines from 12 to 24 feet wide, consists of 2 Hi-lectric, 180 cycle motor-in-head vibrators spring mounted on a shaft and hanger. Position of the vibrator heads, which ride completely submerged in the concrete for maximum vibrating efficiency, is controlled by a hand lever. There are no cumbersome flexible shafts or external drive units.

Powered by a 120 volt, 180 cycle gasoline engine-driven generator mounted on the spreader or finisher, the vibrators produce up to 10,500 VPM—can be mounted as much as fifteen inches in from the side forms and still vibrate concrete effectively at the forms, leaving it free from honeycomb.

The Maginniss side form vibrator attachment eliminates the need for hand labor—cuts costs—produces better paving. Ask your Maginniss distributor for all the facts. You'll find him listed in the Yellow Pages.

Actual photo showing honeycomb left in slab before Maginniss attachment was installed.

Photo of slab on same job showing dense, sound concrete consistently produced by Maginniss Side Form Vibrators.

Maginniss HI-LECTRIC POWER TOOLS

AA-1708

MAGINNISS
POWER TOOL COMPANY
154 DISTL AVENUE • MANSFIELD, OHIO

For more facts, use Request Card at page 18 and circle No. 265

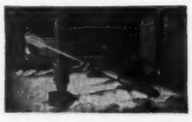
FAST, ACCURATE, WITH NEW ACKER VANE TEST KIT!

The Acker Vane Shear Test Kit has everything needed to obtain fast, accurate, "in-place" shear readings to depths of 100 feet!

It's easy to use and provides accurate soils information at low cost! For ease in carrying, the entire set of tools are packaged in a handy steel kit.

Write today for prices and free illustrated folder 700! C&E

Assemble the Vane to the Rod!



Insert in Casing and Apply Pressure to the Torque Wrench!

Consult the Torque Chart for Accurate Reading!

ACKER DRILL CO., INC. 725 W. Lackawanna Avenue Scranton, Penna.

a complete line of Soil Sampling Tools, Diamond and Shot Core Drills, Drilling Accessories and Equipment

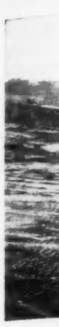
For more facts, use Request Card at page 18 and circle No. 266

end-
f Eu-
oduc-
cubic

load-
eet of
apers
shov-
al for
bank-
proc-
rolled
matic
rs ac-
day.

ll rig,
4½-
e 60-
drau-
rear
ating
con-
the
e ac-

EERS



A Euclid
channel
keeps pu

The ri
the 9-fo
foot cer
with a
cent Gel
fertilizer

Big

Anoth
to drive
cutoff w
foot-high
frame w
from a 3
piles, th
Terry 10
and hois
steam bo

Jettin
piles are
driven, a
30 or 40
pile. A 1
sists the
The two
tubing a
of the p
sometime

G
tr
m

A Euclid 50-ton end-dump drops its load of granular material into the channel between the closure dam and the diversion channel. The Cat D9 keeps pushing the material into place and leveling off the fill.

Euclid end and bottom-dumps, carrying up to 50 tons of material per haul, dump shale into the closure gap at Oahe Dam. Closure was completed in 21½ hours on August 3.

The rig makes fast work of drilling the 9-foot-deep holes on about 10-foot centers. The holes are loaded with a mixture of Hercules 60 per cent Gelamite and ammonium nitrate fertilizer.

Big rig handles sheet piling

Another unusual rig is being used to drive the long sheet piles in the cutoff wall under the dam. Its 130-foot-high tower is mounted on a steel frame which rides on rails. Cables from a 3-drum hoist handle the sheet piles, the jets, and the McKiernan-Terry 10-B-3 hammer. Both hammer and hoist are powered by a 125-hp steam boiler.

Jetting is used extensively as sheet piles are driven. While one is being driven, a spade jet opens up the first 30 or 40 feet of the hole for the next pile. A 120-foot-long hairpin jet assists the sheet pile down to shale. The two lengths of the 4-inch jet tubing are positioned on either side of the pile being driven. The piles, sometimes as long as 80 feet, are driven through pervious river deposits to penetrate 5 feet into shale.

Work spans closure

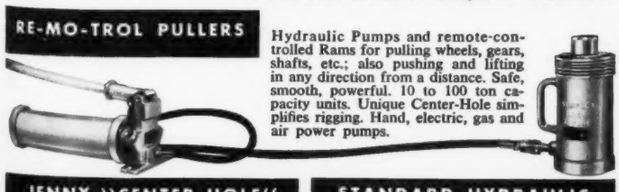
Work on this contract, which started earlier this year, spanned the dramatic closure of Oahe Dam, which Western handled, working in close cooperation with the U. S. Army Corps of Engineers. With the Corps calling the signals, Western guided its powerful team of earthmovers to close the 125-foot gap in the river in a 21½-hour period on August 3. As engineers took flow readings, 50-ton end-dumps tumbled their loads at the water's edge. Readings were radioed to a communications center where engineers quickly translated the readings to points on a graph. The curve on the graph told the story: water level rising, flow decreasing.

After 11 hours of placement at the rate of about 3,200 cubic yards per hour, engineers decided it was safe to narrow the closing front. Instead of dumping along a 900-foot front, the

(*Continued on next page*)

Push, Pull or Lift Safely with SIMPLEX HYDRAULIC EQUIPMENT

RE-MO-TROL PULLERS



Hydraulic Pumps and remote-controlled Rams for pulling wheels, gears, shafts, etc.; also pushing and lifting in any direction from a distance. Safe, smooth, powerful. 10 to 100 ton capacity units. Unique Center-Hole simplifies rigging. Hand, electric, gas and air power pumps.

JENNY "CENTER-HOLE" PULLERS

Self-contained Hydraulic Pullers with famous Center-Hole for easy pulling, pushing, lifting. Rugged, versatile; 6 models, 30 to 100 ton capacities.

STANDARD HYDRAULIC JACKS

Sturdy, safe, efficient units to do any lifting job easy and fast. 8 models; 3 to 100 ton capacities.

Get full information on the most complete industrial line of Hydraulic Jacking and Pulling equipment; write for Hydraulic Bulletin.

WORLD'S LARGEST MFRS. OF INDUSTRIAL MECHANICAL AND HYDRAULIC JACKS

SIMPLEX JACKS

TEMPLETON, KENLY & CO.
2511 Gardner Road
Broadview, Illinois

For more facts, use Request Card at page 18 and circle No. 267

JOINTS MAINTAIN THEIR SEAL UNDER ALL WEATHER CONDITIONS WITH...

SEALTIGHT Rubber-Asphalt Joint Seal maintains adhesion in hot weather . . . will not flow or extrude. Does not smear or track from tires.

Maintains adhesion in cold weather . . . will not crack or become brittle.

SEALTIGHT®

RUBBER-ASPHALT JOINT SEAL

RUBBER-ASPHALT JOINT SEAL compound available in both hot-pour and cold-applied types. SEALTIGHT Hot-Pour Rubber-Asphalt meets Federal Specifications SS-S-164 and CAA Specification P-605...SEALTIGHT Cold-Applied Rubber-Asphalt meets Federal Specification SS-S-159 and CAA Specification P-615. Both are ideal for use in the joints of concrete streets, highways, bridges, etc.

JFR RUBBER-ASPHALT JOINT SEAL is recommended for sealing concrete runways where resistance to jet fuel is necessary. Available in Hot-Pour Type to meet Federal Specification SS-S-00167 and Cold-Applied Type that meets Federal Specification SS-S-00170. Easy and economical to apply.

TONGUE AND GROOVE Joint, used primarily as a longitudinal joint, provides a "keyed joint" that assures maximum efficiency in load transmission . . . helps to prevent blow-ups, spalling and controls cracking. Completely waterproof . . . produced from asphalt hardboard . . . is rigid, easy to handle and install, will not extrude. More economical and safer than steel center strips and will not rust away. Approved by Federal, State and Local engineering authorities.

EXPANSION JOINTS specifically designed to meet the needs of modern, properly-designed, properly-jointed construction projects. All types including Asphalt, Fibre, Sponge Rubber, Standard Cork, and Self-Expanding Cork joints available from "stock" at your local SEALTIGHT distributor. Meet Federal and State specifications.

SEALTIGHT rubberized-asphalt compounds provide the ideal sealer for years of economical, trouble-free joints in concrete construction. They feature high resilient and adhesive properties and are able to maintain a bond at below zero temperatures. Will provide a positive seal in all types of monolithic construction. Designed for use with non-extruding type fibre expansion joints.

SEALTIGHT®

PRODUCTS

- EXPANSION JOINTS . . . Asphalt, Fibre, Cork and Sponge Rubber.
- TONGUE and GROOVE Center Strip.
- Hot and Cold Rubber Asphalt Joint Seal.
- Hot and Cold JFR Rubber Asphalt Joint Seal.
- Air Entraining Agents.
- Curing Compounds.
- Curb and Gutter Sections.
- "PREMOULDED MEMBRANE" Vapor Seal.
- "DURAJOINT" PVC Waterstops.
- "HYDROMAT" Asphalt Liners.

Write today for complete information on the above products plus information about the many other top-quality SEALTIGHT products for highway construction . . . ask for the "PAVING PRODUCTS" Catalog.

W. R. MEADOWS, INC.

13 KIMBALL ST. • ELGIN, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 268

(*Continued from preceding page*)

haul units concentrated on the upstream 400 feet. In another ten hours, the breach was closed.

But days and months of preparation were necessary to set the stage for closure. For a period of several days before, the flow on five large tributaries of the Missouri above the dam was periodically measured. By recording the stages in these rivers, engineers were able to predict the flow at the closure point. In fact, unexpected high levels in the Cheyenne River made it advisable to start closure twelve hours ahead of schedule. It was not simple for the engineers to determine the safe length of the gap to be closed for certain flows of the river. Involved computations were needed to figure the rate at which material had to be dumped, and the rate of dumping was not only dependent on the flow of the river, but also on the size of the chunks of shale.

In all, the Omaha District of the Corps of Engineers had to consider 35 variables and 120 different conditions to handle the job. The computations would have taken one man almost a year with a desk calculator. But with an electronic computer, the calculations were made in less than a week, and a closure plan was put on paper many months before the actual closure.

The original plan was slightly altered because flows in the river were higher than expected. With a river flow of 8,800 cfs, the working front was lengthened from 600 to 900 feet. After 11 hours of dumping, the front was down to 400 feet. The engineers asked for 2,500 cubic yards of material to be dumped in the gap hourly. The contractor gave them 3,200. The increased rate, plus the use of shale in larger chunks than anticipated, speeded the time of closure.

As soon as the river had been stopped at the downstream berm, a diversion dam was built in the still water across the gap in the upstream berm. Working from both sides of the channel, Cat D9 tractor-dozers pushed stockpiles of shale into the gap to build the dam.

Most of the water between the dams was then drained off by cutting a channel through the closure dam. Five hours after closure had been made, the water behind Oahe Dam rose high enough to flow through the lowest of the six flood-control tunnels.

With $8 million worth of equipment on the job, Western had more than enough big earthmovers to meet the demands of the closure. Two Marion 191M electric shovels gouged 13-yard bites out of banks of lightly blasted shale. Another 191M, rigged as a dragline, hauled out 14-yard buckets of chunky shale.

The big machines loaded twenty Euclid 50-ton 32-yard end-dumps and ten Euclid 25-yard bottom-dumps. The trucks trundled their payloads about 8,000 feet from the excavation area on the right bank to the closure trough. As many as six D9 tractor-dozers shoved the shale into the turbulent water. To place 3,200 cubic yards per hour along the closure front, the trucks dumped their loads at about two a minute.

Personnel

The Oahe project is headed by J. W. Sibert, area engineer for the Corps' Omaha District, which is headed by Col. D. G. Hammond, district engineer. L. G. Leavitt is resident engineer for the earthwork. A. F. Arrington is resident engineer for the power works.

For Western Contracting Corp., "Rip" Collins is the project manager, assisted by "Blackie" Blackwell, the general superintendent. L. Garland Everist is the construction manager.

THE END

City, suburban growth is topic of new book

"The Exploding Metropolis", presented by the editors of *Fortune* magazine, discusses the problems involved in the tremendous growth of American cities and suburbs. The book maintains that our citizens, cities, and countrysides are in a critical condition, and that they can be spared only by an immediate and drastic re-evaluation of our development programs measured by the human scale, which takes into account the backgrounds, motives, and requirements of citizens.

Priced at $3.95, the book may be purchased from Doubleday & Co., Inc., 575 Madison Ave., New York 22, N. Y.

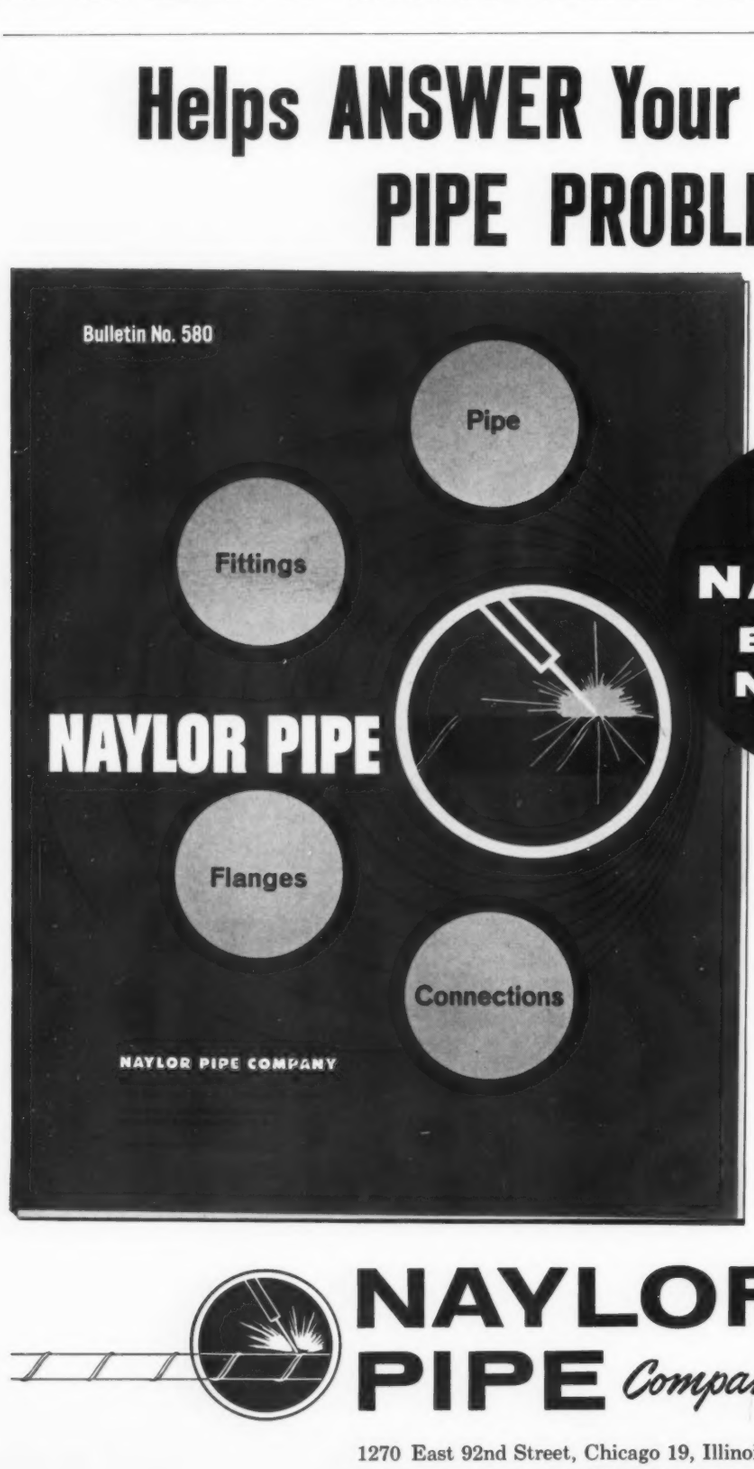
Book on steel structure for students, engineers

A simple nontechnical explanation of the metallurgical structure of the various steels and steel alloys is contained in "The Structure of Steel", by Edwin Gregory and Eric N. Simons. The basic chemistry of steel and iron is outlined; impurities found in steels and their effects are explained; and the wide range of modern alloy steels is reviewed.

The old and the modern methods of testing are described, as well as the heat-treatment processes from the point of view of their effects on the steel.

Priced at $10, the book may be purchased from the Philosophical Library, Inc., 15 E. 40th St., New York 16, N. Y.

Helps ANSWER Your PIPE PROBLEMS



Write for NAYLOR Bulletin No. 580

Here in concise form is helpful data covering NAYLOR pipe, fittings and connections for use in the construction field. Bulletin No. 580 includes standard specifications on NAYLOR Spiralweld pipe in sizes from 4" to 30"; standard fittings and welding flanges carried in stock; NAYLOR Wedgelock couplings and all types of connections to meet pipe line needs. Write for your copy today.

NAYLOR PIPE Company

1270 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

For more facts, use Request Card at page 18 and circle No. 269

Convention calendar

November 12 Cleveland Engineering Society
Construction Conference, Engineering and Scientific Center, Cleveland, Ohio. CES, 3100 Chester Ave., Cleveland, Ohio.

November 17–21 National Association of Corrosion Engineers
Eighth Western Region Conference, Statler Hotel, Los Angeles, Calif. Frank V. Wilby, Southern California Gas Co., P. O. Box 3249, Terminal Annex, Los Angeles 54, Calif.

November 20–21 Electronic Computation Conference
Conference, sponsored by Kansas City Section of the American Society of Civil Engineers and the Structural Division of ASCE, Continental Hotel, Kansas City, Mo. Steven J. Fenves, secretary, ECC, Civil Engineering Hall, University of Illinois, Urbana, Ill.

November 20–21 Mississippi Valley Flood Control Association
Meeting, Hotel Roosevelt, New Orleans, La. R. W. Crawford, executive vice president, MVFCA, 203 Peabody Hotel, Memphis 3, Tenn.

November 30–December 5 American Society of Mechanical Engineers
Annual Meeting, Statler and Sheraton-McAlpin Hotels, New York, N. Y. ASME, 29 W. 39th St., New York 18, N. Y.

December 1–5 American Association of State Highway Officials
Forty-fourth Annual Meeting, Sheraton-Palace Hotel, San Francisco, Calif. A. E. Johnson, executive secretary, AASHO, 917 National Press Bldg., Washington 4, D. C.

December 10–11 National Construction Industry Conference
Fourth Annual Meeting, Sherman Hotel, Chicago, Ill. R. T. Majanovich, conference chairman, NCIC, Armour Research Foundation, 10 W. 35th St., Chicago 16, Ill.

January 5–9 Highway Research Board
Annual Meeting, Sheraton-Park Hotel, Washington, D. C. Fred Burggraf, director, HRB, 2101 Constitution Ave., Washington 25, D. C.

January 19–22 American Road Builders' Association
Fifty-seventh Annual Convention and Materials and Service Exhibit, Dallas Memorial Auditorium, Dallas, Texas. Norman T. Almquist, administrative services manager, ARBA, World Center Bldg., Washington 6, D. C.

January 19–23 Associated General Contractors of America
Annual Meeting, Americana Hotel, Miami Beach, Fla. James D. Marshall, executive director, AGC, 20th and E Sts. N. W., Washington 6, D. C.

January 25–29 Associated Equipment Distributors
Fortieth Annual Convention, Conrad Hilton Hotel, Chicago, Ill. W. G. Bowman, administrative assistant, AED, 30 E. Cedar St., Chicago 11, Ill.

January 26–28 Association of Asphalt Paving Technologists
Annual Meeting, Brown Palace Hotel, Denver, Colo. Ward K. Parr, secretary-treasurer, AAPT, 1224 E. Engineering Bldg., University of Michigan, Box 619, Ann Arbor, Mich.

January 26–29 Plant Maintenance and Engineering Show
Exhibit, Public Auditorium, Cleveland, Ohio. Clapp & Poliak, 341 Madison Ave., New York, 17, N. Y.

January 27–30 National Crushed Stone Association
Annual Meeting, Americana Hotel, Miami Beach, Fla. J. R. Boyd, executive director, NCSA, 1415 Elliott Place N. W., Washington 7, D. C.

January 28 The Moles
Award Dinner, Waldorf-Astoria Hotel, New York, N. Y. The Moles, Biltmore Hotel, New York 36, N. Y.

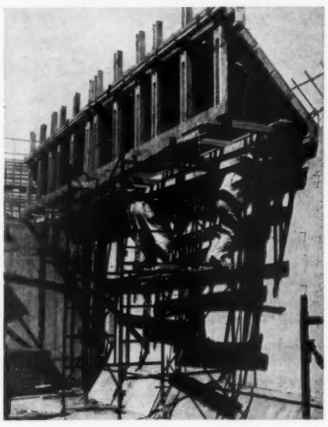
January 28–29 Midwest Welding Conference
Fifth Annual Conference, Chemistry Building, Illinois Institute of Technology, Chicago, Ill. Harry Schwartzbart, supervisor of welding research, Armour Research Foundation, 10 W. 35th St., Chicago 16, Ill.

Eliminating road dust topic of new bulletin

"Eliminating Dust Around Construction" is available free from the Calcium Chloride Institute, 909 Ring Bldg., Washington 6, D. C.

The bulletin points out the advantages of calcium chloride as a dust layer for unpaved roads: better public relations, safety to motorists, savings to the contractor, and economies of construction and maintenance. It also lists areas where calcium chloride might be used, tells how to use it, and includes application charts and specifications for dust laying.

Gang Forming Licks "Y" Wall Problem



Pays Off in Quality Pours, Speed and Reduced Costs

2,665 lineal feet of "Y" walls and half "Y" walls, with 16'9" high walls on tank addition to sewage treatment plant—that was the pouring problem faced by contractors, Wander & Mason of Worthington, Ohio. They solved the problem by pouring the walls in three lifts with the forms ganged for the final "Y" and half "Y" pours.

On the "Y" walls Symons panels, fillers and bay corners were ganged in 16-foot sections. One 16-foot outside section was stripped, moved to the next wall section and reset by three men in 20 minutes.

Symons Forms, Shores and Column Clamps can be rented with purchase option. Information on Symons products is available upon request. Symons Clamp & Mfg. Co., 4251 Diversey Avenue, Dept. L-8, Chicago 39, Illinois.

MORE **SAVINGS** FROM **SYMONS**

for PROFITABLE performance!

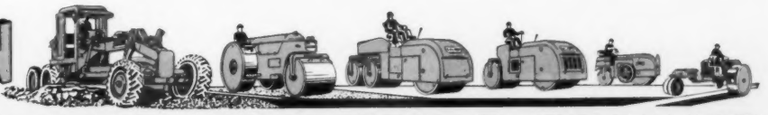
You can't beat a

GRADE-O-MATIC

Write today for literature

THE GALION IRON WORKS & MFG. CO.
General and Export Offices—Galion, Ohio, U.S.A.

GALION ESTABLISHED 1907



MOTOR GRADERS & ROLLERS

For more facts, use Request Card at page 18 and circle No. 270

The 125-foot-high west approach fill for the railroad crossing of the Missouri River near Mobridge, S. Dak. A tractor-dozer shapes the 3 to 1 slopes and, in the background, draglines distribute the hydraulic fill. The 5.9-million-yard embankment is needed since this is in the Oahe Dam reservoir pool area.

Dredge builds 125-foot fill for new railroad bridge near site of Oahe Dam

A high-powered electric dredge is boosting sandy material to a height of 125 feet to complete the approach fill for a railroad bridge crossing the Missouri River near Mobridge, S. Dak.

Getting much of its material from the river bottom, the 22-inch suction dredge is placing the greater part of the 5.9 million cubic yards of the approach fill. Four 1,000-hp electric motors supply the power for pumping the sand up to the height of a 12-story building. Western Contracting Corp., Sioux City, Iowa, has the $5,044,552 contract for building the approach fill on the west bank of the river.

The Chicago, Milwaukee, St. Paul & Pacific Railroad at present crosses the Missouri on a low-level bridge a few thousand feet downstream from the site of the fill. With the rising of the reservoir pool backed up by Oahe Dam, the present bridge will become submerged. To be above water, the new one-track bridge will have to have one of its piers rise 203 feet above the bottom of a caisson. Work on the substructure of the 2,349-foot-long bridge was done by Al Johnson Construction Co., Minneapolis, Minn., under a $3,132,762 contract and under the supervision of the U. S. Army Corps of Engineers.

Although most of the approach fill will be placed by the dredge, a fleet of Euclid scrapers hauled in over a million cubic yards of material to build the lower part of the fill. Four Euclid TS-18 scrapers and four TS-24's, push-loaded by a Euclid TC-12 dozer, hauled the clay from nearby borrow pits. Pneumatic rollers compacted the 7,000-foot-long fill.

Dredge built on site

While the scrapers were building up the lower part of the fill, the contractor was already at work assembling the sectional hull of the electric dredge. The dredge was built with a 28-inch suction line. A 400-hp jet pump, working on a 4-inch line, churned up the river-bottom material so that it could be picked up by the suction line.

For the lower sections of the fill, the dredge was powered by only one General Electric 4,600-volt 1,000-hp motor. When the fill was about 60 feet high, three additional 1,000-hp electric motors were installed to bring the fill up to its final height of 125 feet above the river level.

To supply the dredge with electricity, the contractor put up a 41,000-volt power line on wooden poles along the bank of the river. A transformer, mounted on a Euclid truck, brought the voltage down to 4,490 volts. The truck-mounted transformer could be conveniently moved to be within cable-distance of the dredge. The cable ran from the transformer along the floating discharge line to the motors on the dredge.

Early in the job, the dredge worked in the river upstream from the fill. Maneuvering with its two forward swing lines and two rear spuds, the dredge made about 700-foot swings in water up to 50 feet in depth. Powered by only one General Electric 1,000-hp motor, the dredge built up the fill at a rate of about 1,000 cubic yards per hour. During winter, the dredge stayed out of the way of heavy ice floes by working in a borrow area bordering the river. When work was resumed the following spring, four mo-

This compact Jaeger Model 2PN, pumps all the water a 2" suction hose can handle. **With 2½" suction hose it pumps more than 14,000 gph.**

Now handle more water with Jaeger pumps

Today's Jaeger Sure Prime pumps deliver performance never before offered—and at slower, long-life operating speeds. For example, a Jaeger 6PH can handle 100,000 gph as a dewatering pump or deliver 975 gpm at 60 psi pressure for well point jetting or gravel washing. Base your pump buying on latest information. See your Jaeger distributor or send for catalog.

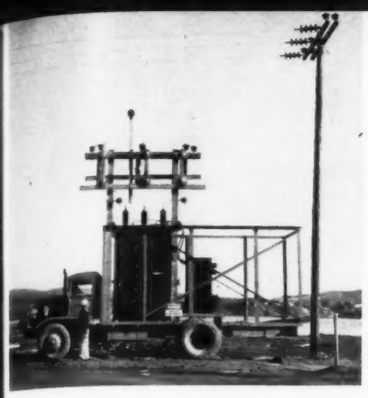
THE JAEGER MACHINE CO., 701 Dublin Avenue, Columbus 16, Ohio

AIR COMPRESSORS • MIXERS • PAVING SPREADERS and FINISHERS

For more facts, use Request Card at page 18 and circle No. 271

ANOTHER
BMCO
FIRST!
13
WHEEL
SELF-PROPELLED ROLLER
NOW . . . YOU CAN CUT YOUR COMPACTION TIME IN HALF!
This new exclusive BMCO 13 wheel roller makes it possible for you to do the same amount of work in half the time!
With complete oscillation on all wheels and power steering this 13 wheel BMCO compactor is easy to handle. With the largest power unit in its class and extra displacement . . . this is the compactor for you in '58.
For more information write, wire, or phone!
MORE COMPACTION
FEWER PASSES
50% LARGER
BMCO
BROWNING MANUFACTURING CO.
111 HUMBLE AVENUE
SAN ANTONIO 6, TEXAS
P. O. BOX 2707

For more facts, use Request Card at page 18 and circle No. 272



Power for the dredge is taken from a 41,000-volt line and stepped down to 4,490 volts by a transformer mounted on a Euclid truck. Cable runs from transformer to dredge on the floating discharge line.

This 22-inch suction dredge, powered by a General Electric 1,000-hp motor, places about 1,000 cubic yards of material per hour for the lower part of the approach fill.

...most 6 million cubic yards ...embankment is being placed ...west approach to bridge

tors were put into operation, and production increased to 2,000 cubic yards per hour at the maximum height of the fill.

The floating section of the 22-inch discharge line was built out of 50-foot lengths of pipe connected with Mobile Pulley & Machine Works ball-and-socket joints. The land section of the line climbed the steep fill and discharged on the top.

Dozer and dragline work

To control the runoff of the water, a Caterpillar D9 tractor-dozer built 4-foot-high dikes around the perimeter of the fill. The water drained from the area through a boxlike steel flume funneling into a 40-inch pipe. The

To control the flow of the discharge water from the fill, a Caterpillar D9 builds 4-foot-high perimeter dikes on top of the fill.

arrangement kept much of this part of the fill from washing out. The material was built up in about 2-foot lifts. Water settling through the fill compacted the sandy material.

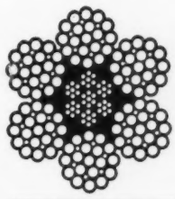
The sides of the fill were brought to a 3 to 1 slope by a Northwest 3-yard dragline. A tractor-dozer smoothed off the slope to complete the operation.

Rock is big item

Protecting the slopes of the high fill is a composite cover consisting of a 6-inch filter blanket, a 6-inch layer of spalls (1 to 6-inch rock), and a 2-foot layer of dumped riprap (4 to 24-inch rock). With the total of dumped riprap alone estimated at almost 200,000 tons, the rock-placing becomes a big operation. In addition to protecting the slope, some 55,000 tons of rock is needed to fill the 5-foot-deep

(*Continued on next page*)

For more facts, circle No. 273→



For extra high strength use

WICKWIRE

DOUBLE GRAY

...save money...increase safety

In many operations where wire ropes occasionall operate near their breaking strength, it will pay yo to switch to Double Gray. If you use Double Gra on your present equipment, under equal load con ditions, you'll get a safer, more economical opera tion. That's because Double Gray's higher strength allows you to operate with a greater safety factor– resulting in longer rope life and less equipmen downtime.

*Wickwire Double Gray Wire Rope is made of extra improved plow steel. Fortified by an independent wire rop core of the same extra high strength steel, Double Gray rop has a 15% higher breaking strength than the catalog breakin strength of an improved plow steel rope with IWRC.

For your free copy of our informative ne Double Gray booklet, write to:

Advertising Department
The Colorado Fuel and Iron Corporation
575 Madison Avenue, New York 22, N. Y.

CF&I

PRODUCT OF WICKWIRE SPENCER STEEL DIVISIO
THE COLORADO FUEL AND IRON CORPORATIO

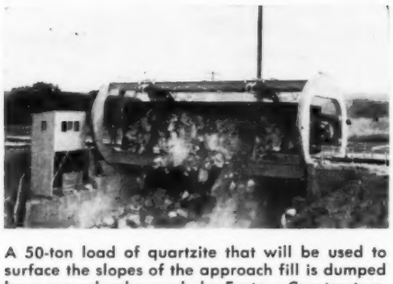
THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billing Boise • Butte • Denver • El Paso • Farmington (N. M.) • Fort Worth • Houston • Kansas Ci Lincoln • Odessa (Tex.) • Oklahoma City • Phoenix • Pueblo • Salt Lake City • Tulsa • Wichit
PACIFIC COAST DIVISION—Los Angeles • Oakland • Portland • San Francis San Leandro • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicag Detroit • Emlenton (Pa.) • New Orleans • New York • Philadelphia

640

WICKWIRE ROPE A CF&I PRODUCT

LOOK FOR THE YELLOW TRIANGLE

The dredge makes 700-foot swings in water up to 50 feet deep in the Missouri as it builds up the lower portion of the fill. Three additional 1,000-hp motors will be used to get the fill up to its final height of 125 feet.



A 50-ton load of quartzite that will be used to surface the slopes of the approach fill is dumped by a car unloader made by Eastern Constructors, Inc., Poland, Ohio. The unloader turns the car 180 degrees to complete the dump in 90 seconds.

(*Continued from preceding page*)

keyway at the toe of the slope.

The rose-colored quartzite used in the operation had to be hauled in by rail from Dell Rapids, S. Dak., about 175 miles away. The haul was so long that it cost more to ship the rock than to buy it.

After the railroad cars reached a siding near the fill, it took little time to unload them. A car unloader, manufactured by Eastern Constructors, Inc., Poland, Ohio, took each car in its giant grasp and dumped out the rocks in about 90 seconds. The car rolled into the barrel-shaped unloader, was clamped in place, and then rotated through almost 180 degrees. The 50-odd tons of rock fell to a pit bordered by two concrete retaining walls. Average time for a car to go through the unloader was about six minutes.

After the rock was dumped, it was loaded into end-dumps by an Allis-Chalmers HD-20 front-end loader. The trucks were lowered over the top edge of the fill and down the 3 to 1 slope, and a Caterpillar D9 tractor-dozer spread the rocks on the slope.

Personnel

The Omaha District of the Corps of Engineers is responsible for the construction of Oahe Dam, as well as for the relocation work in the Mobridge area. The area engineer for the Oahe project is John W. Sibert, Jr. Harry L. Dobbins is the resident engineer in charge of relocations around Mobridge.

Western Contracting Corp. has as its project manager T. E. Speight. William McCullough is the dredge superintendent, and Dan Everist is the rock superintendent. T. W. Lowe is project accountant. THE END

Engineers Club erects new headquarters

Construction is well under way on a $350,000 structure for the Engineers Club of St. Louis, Mo. The entire building was designed around the basic module of the equilateral triangle, with 6-foot sides. The total structure will measure about 170 × 75 feet. Supporting piers will be triangular in cross section, with glass between. The upper part will be protected from the sun by vertical sunshades anchored to the piers a foot or so outside the wall. The building is located at 4359 Lindell Blvd.

In the new construction market, DODGE REPORTS can uncover them for you

Have you ever figured the cost—in salesmen's time and missed opportunities—of blind sales calls and calls based on rumors? In some fields, it's the only way of getting business. But not in the new construction market! Not when you can use *Dodge Reports* to pinpoint *active* prospects... to guide the timing of sales calls... to help you concentrate on the jobs you *know* will be profitable.

Dodge Reports tell in advance who is going to build what and where, tell you who to see, when bids are wanted—even who else is bidding and who finally gets the job. You specify the area, types of jobs, and stages of progress you want to cover. Reports are mailed daily direct to you or your salesmen. *Dodge Reports* will cover all types of construction for you anywhere in the 37 Eastern States.

WRITE FOR FREE BOOK

F. W. Dodge Corporation, Construction News Division,
119 West 40th Street, New York 18, N. Y., Dept. 7118

Send me the book "Dodge Reports—How To Use Them Effectively" and let me see some typical Dodge Reports for my area. I am interested in the general markets checked below.

☐ House Construction ☐ General Building
☐ Engineering Projects (Heavy Construction)

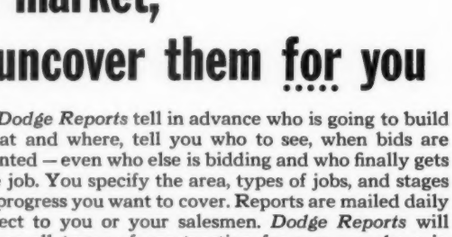
Area_____

Name_____

Company_____

Address_____

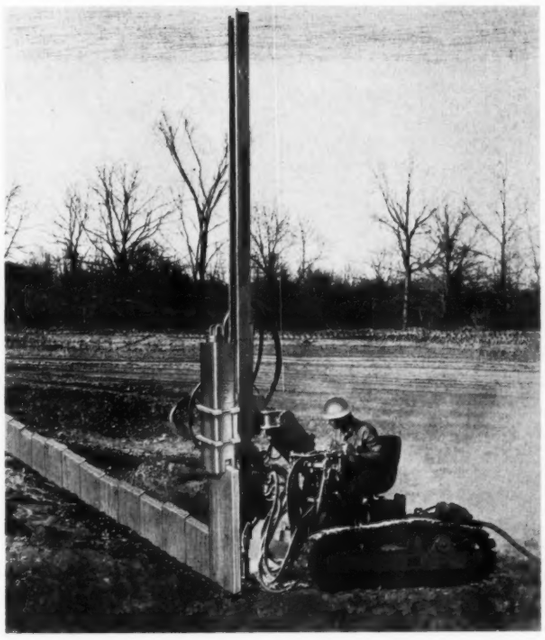
City_____ Zone_____ State_____



For more facts, use coupon, or Request Card at page 18 and circle No. 274

PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.



Concrete breaking, drilling, pile driving, all with one rig

A new Trac-Hammer that can be used for a variety of concrete-breaking, pile-driving, or drilling operations is announced by Vulcan Iron Works and the Gardner-Denver Co.

The Trac-Hammer is an adaptation of the Vulcan portable pile hammer for use on Gardner-Denver's Air-Trac drilling rig. Through self-propelled Trac design, and the location of the mast, on which hammer and drill are interchangeable, the rig can work indoors reach corners, handle curves, and perform in other areas formerly considered inaccessible with mobile equipment, the manufacturer claims.

The machine tows its own compressed-air supply and features a boom that enables it to drive piles or drill holes from virtually every position.

The fully automatic hammer unit has only four moving parts. It operates from an air pressure of 60 psi and is capable of delivering 303 blows per minute with a "striking part" weight of 100 pounds.

The Trac-Hammer is powered by two 5-cylinder radial air motors through double-chain drive, and can be operated by one man.

Write to the Gardner-Denver Co., Dept. C&E, S. Front St., Quincy, Ill., or use the Request Card at page 18. Circle No. 79.

Excavator-crane lifts 15 tons, takes 3/4-cubic-yard bite

A new excavator-crane called the Type M is announced by the Insley Mfg. Corp.

On crawlers, the machine is rated as a 15-ton crane or a ¾-cubic-yard excavator. Standard 12-foot 6-inch crawlers can be equipped with 24 or 30-inch shoes. The crawlers have self-cleaning treads and tumblers, double-faced crawler rollers, and heat-treated shoes. Sealed crawler rollers and end tumblers are optional.

On rubber, the Type M has a 20-ton lifting capacity, and is available with a heavy or light truck mounting. Low axle load distribution permits highway travel without a permit in most states, according to the manufacturer.

The Type M offers such features as counterweight removal by gantry, removable outriggers, pin (folding) boom, pendant cables, floating bridle tie-down to boom, and torque converter or fluid coupling or 2:1 reduction transmission at motor to decrease load line speed.

The turntable is 63 inches in diameter and has a heat-treated roller path and internal bullgear.

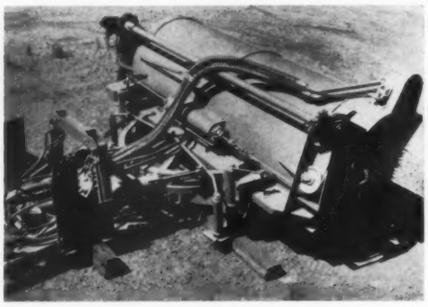
For further information write to the Insley Mfg. Corp., Dept. C&E, P. O. Box 167, Indianapolis 6, Ind., or use the Request Card at page 18. Circle No. 83.

New cement additive good for patching

The B. F. Goodrich Industrial Products Co. announces a new additive to portland cement for patching.

Described as a polymer with built-in adhesive characteristics, the material is said to have optimum storage stability and to retain its adhesive and cohesive properties indefinitely, either in storage or in service, in or out of solvent.

For further information write to the B. F. Goodrich Industrial Products Co., Dept. C&E, 500 S. Main St., Akron, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 59.



The Model S-40, detached from its mounting, is shown here in close-up. The unit is designed to permit change from sweeping slush or light snow to plowing heavy snow.

Snowplow-broom unit is versatile equipment

The Model S-40 combination snowplow and fluid-driven broom is available from the Lull Engineering Co.

For mounting on heavy-duty 4-wheel-drive trucks, this equipment is designed to permit change from sweeping slush or light snow to plowing heavy or compacted snow.

The Model S-40 is operated by a fingertip-control panel in the truck cab. The sweeper is mounted on a roll-over shaft and is moved in or out of operation by power-hydraulics. A Hercules gasoline engine supplies the power.

According to the manufacturer, the Model S-40 plows or sweeps a 10-foot strip, and the variable broom rotation speed is regulated by the power-unit engine rpm.

For further information write to the Lull Engineering Co., Dept. C&E, 3045 Highway 13, St. Paul, Minn., or use the Request Card at page 18. Circle No. 48.

Portable scaffold system offers variety of shapes

Tube-N-Clamp, a new system of scaffolding made up of tubular members and clamps that are portable and adaptable to a wide range of shapes, is announced by Bil-Jax, Inc.

The interchangeable members feature a 1.9-inch outside diameter and are equipped with male and female plated connectors which are an integral part of each unit. The tubular members are available in standard lengths of 4, 6, 8, 10, 13, and 20 feet.

Two types of clamps, swivel and fixed right-angle, are also offered for use in joining horizontal or diagonal members to vertical members. A base plate is furnished, with a male connector for attachment at the base of the vertical columns. For making mobile work platforms or scaffold units, an 8-inch locking-type caster is furnished.

For further information write to Bil-Jax, Inc., Dept. C&E, P. O. Box 38, Archbold, Ohio, or use the Request Card at page 18. Circle No. 7.

To obtain further information about products described in this section, circle the number at the end of the item on the Request Card that is bound in at page 18.

New tractor attachments

New attachments for Caterpillar Model D4 and D6 tractors are:

For the D4, in-seat engine starting from the compartment.

For both D4 and D6 tractors operating with front-mounted hydraulic equipment in atmospheric temperatures over 100 degrees F, a high ambient temperature radiator.

For the D4, a 45-gallon fuel tank; for the D6, a 60-gallon tank. These allow tractors a full day's operation without refueling.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 38.

DIESEL PILE HAMMERS

are self contained — no steam — no air — a small quantity of fuel oil for all-day operation — high driving rate — simple design — easy to maintain — write for Bulletin 67R.

McKIERNAN-TERRY CORP.
82 RICHARDS AVE., DOVER, N. J.

For more facts, circle No. 275

IF YOU OPERATE DIESELS

you can cut down "lugging"... save fuel... lengthen engine life with

TACHOGRAPH

the recording tachometer

The Wagner-Sangamo RPM Tachograph keeps your drivers posted on engine speed at all times—flashes a warning signal to warn of excessive engine speeds and provides supervisors with an accurate charted record to check operator performance. Model BB Tachographs are available for 12 or 24 hour records and for 2500 or 3500 RPM maximum engine speeds. Find out NOW how a small investment in a Tachograph for every diesel you operate can pay big dividends by encouraging safer, more economical driving. Mail the coupon below.

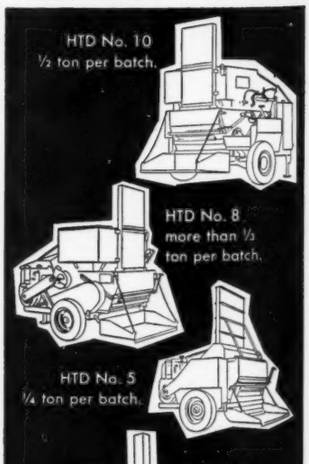
Wagner Electric Corporation
6364 PLYMOUTH AVE. • ST. LOUIS 14, MO.
Please send a copy of Bulletin SU-3

Name_____
Company_____
Address_____
City_____ State_____
We operate_____ Vehicles W558-9

For more facts, use coupon, or Request Card at page 18 and circle No. 276

FOR LOW-COST HOT OR COLD PAVING OR PATCHING IN ANY SEASON

McConnaughay ASPHALT MIXERS



For details and specifications write...

McCONNAUGHAY MIXERS, INC.
LAFAYETTE, INDIANA
National distributors: Asphalt Equipment Co.
3314 Cherry Lane, Fort Wayne, Indiana

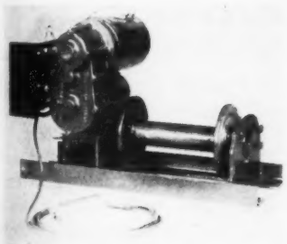
For more facts, circle No. 277

At work on a land-clearing project at Tullahoma, Tenn., an Athens Model S 10-28 Super harrow is being pulled by an International TD-18 crawler tractor. The unit is disking the land after a bulldozer has cleared the area of large trees. Said to be ideal for use on roads, airports, and dams in mixing, pulverizing, aerating, and blending soil with material for subbase, this Athens model features a 12-foot width of cut, with the angle of cut adjustable from the tractor seat. Standard disk diameter is 28 inches. For further information write to the **Athens Plow Co.**, Dept. C&E, Drawer 18, Athens, Tenn., or use the Request Card at page 18. Circle No. 2.

Announce portable winch powered by truck battery

A portable winch powered by truck battery, and designed to lift up to 2,500 pounds and pull 5,000 pounds, is announced by the City Engineering Co., Inc.

Known as the My-Te all-purpose



winch, the unit works off any 6 or 12-volt battery. It weighs 60 pounds and measures 27 inches long, 12 inches wide, and 14 inches high.

Drum speed is 32 rpm, and drum capacity is 150 feet of ¼-inch cable. Other features include a 10-foot remote-control cable with forward and reverse action.

For further information write to the City Engineering Co., Inc., Dept. C&E, 3547 Massachusetts Ave., Indianapolis 18, Ind., or use the Request Card at page 18. Circle No. 111.

New type of paper speeds diazo equipment output

A new type of paper said to speed diazo equipment output, with no sacrifice to print density, is announced by the Keuffel & Esser Co.

Called Helios Blue 11, the paper effects an average time-saving of 30 per cent, according to the manufacturer.

The paper's three most important applications are these:

1. Reproducing from old, worn original drawings, which formerly required much slower speeds to obtain satisfactory prints.

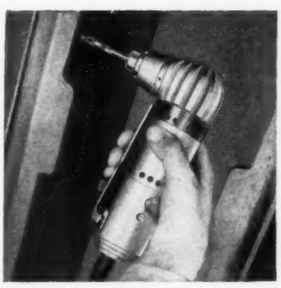
2. Reproducing from sepia intermediates.

3. Reproduction on small diazo equipment, which, because of lower light intensity, must be run at relatively slow speeds—usually below the capacity of the machine.

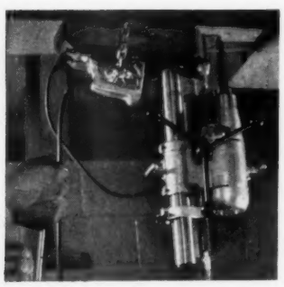
For further information write to the Keuffel & Esser Co., Dept. C&E, Adams and Third Sts., Hoboken, N. J., or use the Request Card at page 18. Circle No. 36.

For more facts, use coupon or circle No. 278→

There's a Black & Decker Drill powered for every job!

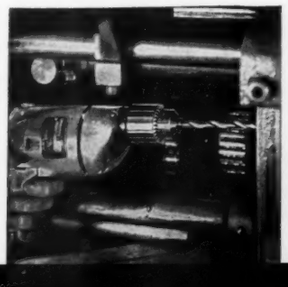


LITTLE SHORTY's the drill you want for those hard-to-get-to, around-corner jobs. Gets in tight spots! Excellent for small unit assembly.

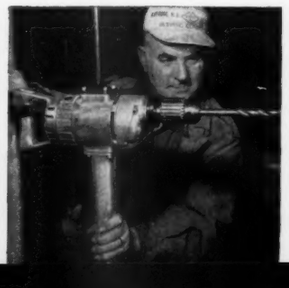


DRILLS UPSIDE DOWN! B&D Magnetic Drill Press sticks to the wall like a fly; operates manually or with exclusive remote control.

TREMENDOUS TORQUE for the tough jobs. ¾" H.D. Holgun® is geared and powered to take on the hard ones. Compact to work in close quarters.



MOST POWERFUL drill of its size available, the ¾" Standard! A rugged tool with plenty of zip in reserve. Fully reversible; positive drive chuck.



71% of purchasing agents say make mine Black & Decker!

A recent industrial publishing company survey reveals that when purchasing agents need electric tools most think first of Black & Decker! One reason why: 33 *different* drills each designed to give you the power you need *plus* easy handling and long, troublefree life!

If you have a drill problem—a small hole in trim to a large hole up among the structural steel—be sure to see Black & Decker. Better still, mail the coupon for a free demonstration of our drill line. THE BLACK & DECKER MFG. CO., Dept. 1311, Towson 4, Maryland. (In Canada: Brockville, Ontario).

Leading Distributors Everywhere Sell

Look Under "TOOLS-ELECTRIC" in Yellow Pages

Black & Decker®

Quality Electric Tools . . . Power-built for top performance

MAIL COUPON FOR FREE DEMONSTRATION

THE BLACK & DECKER MFG. CO., Dept. 1311, Towson 4, Md.

☐ Please arrange for a demonstration of the following drill(s) .....

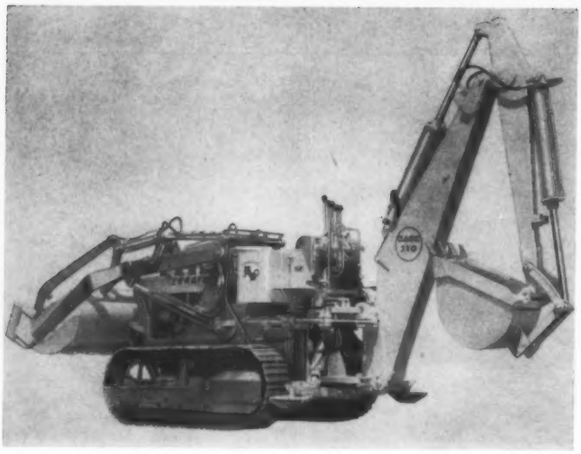
☐ Please send me additional information.

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....



The Model 310 reportedly can cut more than 13 feet of 4-foot-deep trench from one position. The ⅝-yard front-end loader has a 2,600-pound lifting capacity.

Crawler-backhoe-loader offered as matched unit

A new crawler-mounted utility trenching and loading machine is offered by the J. I. Case Co.

Designated Model 310 crawler-backhoe-loader, the basic tractor develops 30 drawbar horsepower and up to 5,690 pounds pull or push-power. The backhoe and loader are operated by 1,600-psi hydraulic power supplied by a 19-gpm tractor-mounted pump.

The Model 310's rear-mounted backhoe digs 12½ feet deep, reaches more than 16 feet from its pivot, and swings 180 degrees. A special feature is foot-operated swing control, which reduces cycle time by leaving the operator's hands free to work bucket levers while swinging.

The ⅝-yard front-end loader exerts 4,300 pounds breakaway, lifts 2,600 pounds, and clears almost 9 feet with bucket dumped.

The Model 310 is powered by a Case 42-hp engine. The 310 tractor is also available with backhoe and front-mounted bulldozer or angle-dozer, in place of the front-end loader.

For further information write to the J. I. Case Co., Dept. C&E, 700 State St., Racine, Wis., or use the card at page 18. Circle No. 30.

McKissick Builds a better block for Every Purpose

Write for complete McKissick Catalog.

McKISSICK

McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma

For more facts, use Request Card at page 18 and circle No. 279

New 6-wheel scraper holds 18 yards struck

The Euclid Division of General Motors announces a third model in its 6-wheel 18-yard scraper line.

Designated Model SS-18, the unit is powered by a Cummins NHRS 320-hp engine and is equipped with a 10-speed transmission and 24.00×25 drive and scraper tires.

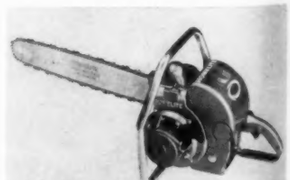
Capacity is 18 yards struck; 21 yards at 3 to 1 slope; and 25 yards heaped at 1 to 1. The scraper bowl can be interchanged with a 17-yard Euclid bottom-dump.

For further information write to the Euclid Division, General Motors Corp., Dept. C&E, 1361 Chardon Road, Cleveland, Ohio, or use the card at page 18. Circle No. 108.

Chain saw fells trees up to 3 feet in diameter

A new Zip chain saw said to cut through 18-inch trees in 18 seconds is announced by Homelite.

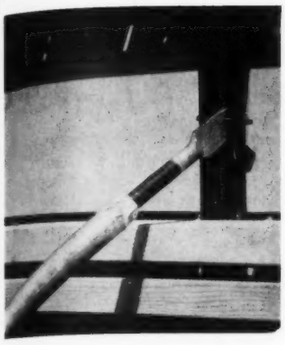
The direct-drive unit comes complete with 12-inch bar and chain, and its features include short-stroke



engine design, all-position diaphragm carburetor, automatic clutch and safety chain guard, and large air filter and fuel tank.

The new saw reportedly has enough power to fell trees up to 3 feet in diameter, quickly and easily. Blades range from 12 to 21 inches.

For further information write to Homelite, Dept. C&E, 71 Riverdale Ave., Port Chester, N. Y., or use the Request Card at page 18. Circle No. 13.



Adjustable form brace, brace extension offered

An adjustable steel form brace, which can be used indefinitely, and a brace extension are offered by the Symons Clamp & Mfg. Co.

The brace is designed so that it can be easily adjusted, either by a man atop the forms or by the crew on the ground, and comes in regular lengths of 6 feet and 10 feet 6 inches, and in special lengths of 15 feet or 19 feet 6 inches for single or multiple pours. The extension is offered in standard lengths of 4 feet 6 inches and 9 feet. A simple wrench adjustment attaches it to the main brace.

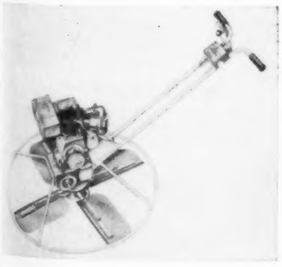
The brace and brace extension may be used either with Symons forms and hardware or on built-up forms employing wooden stakes.

For further information write to the Symons Clamp & Mfg. Co., Dept. C&E, 4249 W. Diversey Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 24.

New concrete finisher offered in six models

The Cook Bros. Equipment Co. announces a new line of Challenge Instant Trowel concrete finishers.

The six models include both 3 and 4-blade machines in 32 and 42-inch trowel diameter sizes. In addition,

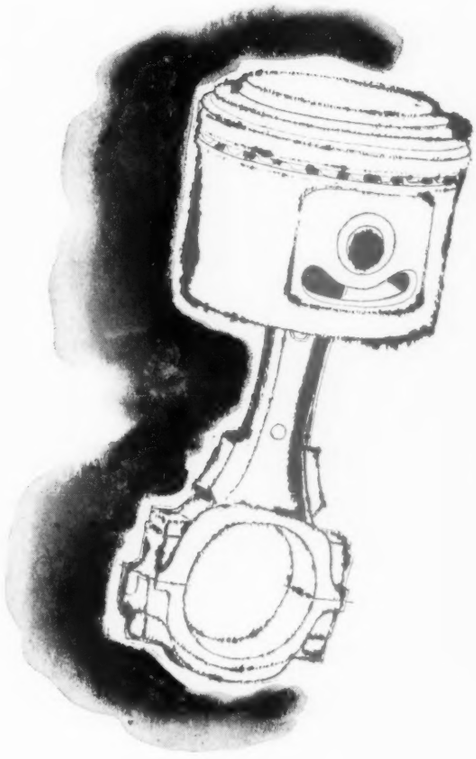


there is a machine equipped with an 18-inch grinding disk; another unit is equipped with a 24-inch floating disk.

According to the company, the separate hydraulic system for blade adjustment operates independently of the Wisconsin air-cooled engine, and, once set, the blades hold the set angle until the operator desires to make a change.

For further information write to the Cook Bros. Equipment Co., Dept. C&E, 3334 San Fernando Road, Los Angeles 65, Calif., or use the Request Card that is bound in at page 18. Circle No. 17.

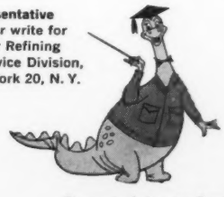
Starting frozen construction machinery is one of the applications for the MoPeCo Model GHE ventilating heater. The unit may also be used to heat as well as ventilate sheds, field offices, and other like enclosures. A Briggs & Stratton gasoline engine powers the blower, which is said to emit no toxic fumes. For further information write to the **Morrison-Pelsue Co.**, Dept. C&E, 2256 S. Delaware St., Denver 23, Colo., or use the Request Card at page 18. Circle No. 100.



Pistons... Oil... and How to Save Money

The longer your pistons work before need of ring replacement—the less your cost of operation. Sinclair Tenol® Oils have the reputation for giving longer service to cylinders, rings and other vital parts. Refill with Tenol now. Next time management asks how you've cut costs, tell them you've switched to Sinclair—and show them the results.

Call your Sinclair Representative for further information or write for free literature to Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. There's no obligation.



SINCLAIR
Tenol® Oils

For more facts, use Request Card at page 18 and circle No. 280

When underground seepage interfered with cofferdam construction on the $200 million Rocky Reach Dam in Wenatchee, Wash., 31 Wintroath pumps proved the answer to the problem. The pumps, equipped with automatic electronic cutoffs, and ranging in size from 30 to 300 horsepower, were placed at different positions along the dam site and employed to pump continuously at the water level, keeping construction surfaces dry and stable. Nineteen of the units were located in wells to 200 feet deep; the other 12 were booster pumps. For further information write to **Wintroath Pumps,** Division of Worthington Corp., Dept. C&E, 1100 S. Meridian Ave., Alhambra, Calif., or use the Request Card at page 18. Circle No. 25.

NEW! LOW COST!

Rivinius

Live Power Steering for "CAT" D-8's

(PRIOR TO 14A MODELS)

TIME-SAVER: Operators report they can operate D8's one, sometimes two speeds faster with hydraulic, fingertip control Rivinius Live Power Steering. Levers move only 1½"; return automatically when released.

MAN-SAVER: Operator fatigue goes down...performance goes up! Rivinius Live Power Steering provides closer, faster control of D8 power and maneuverability.

CLUTCH-SAVER: On each turn, the D8's clutches are engaged smoothly into complete seizure...engagement and disengagement is positive for no wasteful slippage and clutch wear.

DOLLAR-SAVER: This new Rivinius system is compact, easy to install on D8's in the field...consists of hydraulic cylinder, valve, pump, reservoir, hoses, brackets and hardware.

SEE YOUR CATERPILLAR DEALER NOW OR WRITE

Rivinius, inc.

EUREKA, ILLINOIS

FOR "CATERPILLAR" MOTOR GRADERS: Torque Steering Booster ...Hydraulic Moldboard Shift... Snow Blower... Snow Loader

FOR "CATERPILLAR" D8 TRACTORS: Live Power Steering

For more facts, circle No. 281

For more facts on these products, circle the indicated number on the Request Card at page 18.

Transistorized megaphone transmits one-half mile

The TP (transistor-powered) Audio Hailer, a portable megaphone said to project speech further than a half mile, is announced by the Audio Equipment Co., Inc.

Completely self-contained, the unit operates on standard flashlight cells.

The amplifier uses four new-type power transistors to produce an output of 7 watts, 115 db. Other features include "anti-feed-back" construction, hermetically sealed transformers, and a controlled-reluctance microphone.

The TP Hailer weighs 5¾ pounds, and has a pistol-grip for one-hand operation.

According to the manufacturer, it is possible to install a complete new TP chassis in units now in use.

For further information write to the Audio Equipment Co., Inc., Dept. C&E, 75 Harbor Road, Port Washington, N. Y., or use the Request Card at page 18. Circle No. 93.

Truck engine heater for 110 or 220 volts

A new 2,000-watt Zero-Start external-type engine heater is available from the Phillips Mfg. Co.

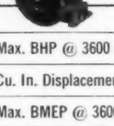
The unit is adaptable to either 110 or 220 volts and is applicable to any liquid-cooled engine.

It is furnished complete with fittings and a 5-foot, 3-pronged electrical cord.

For further information write to the Phillips Mfg. Co., Dept. C&E, 2816 Aldrich Ave. S., Minneapolis 8, Minn., or use the Request Card at page 18. Circle No. 98.

Up to 15% LONGER LIFE from Clinton Engines

The important thing is that you prove this fact to yourself. The features of *any* engine mean nothing until *you* have proved them to your own satisfaction and believe them to be fact. That's why Clinton invites you to make your own grueling torture test on any Clinton Engine mentioned below. We want you to prove to yourself beyond question that a Clinton Engine lasts longer. Write Clinton to make arrangements for your own personal engine torture test.



TAKE A LOOK AT THE PROOF FOUND IN ACTUAL COMPARATIVE TESTS

	Clinton B2590	"A"	"B"
Max. BHP @ 3600 RPM	9.6 BHP	9.2 BHP	9.0 BHP
Cu. In. Displacement	25 Cu. In.	23 Cu. In.	23 Cu. In.
Max. BMEP @ 3600 RPM RATING	84.5 P.S.I.	88.0 P.S.I.	86.1 P.S.I.
Max. BMEP @ 9 BHP @ 3600 RPM	79.2 P.S.I.	86.1 P.S.I.	86.1 P.S.I.
Reduction in BMEP @ 9 BHP	8%	X	X

CLINTON ENGINES CORPORATION

(Formerly Clinton Machine Company)

Engine Division • Dept. 21-C • Maquoketa, Iowa

For more facts, circle No. 282

CONTRACTORS TRUCK CRANE

one man operated — fully hydraulic

Here's a versatile, fully hydraulic, one-man operated truck crane that's an ideal contractors' utility tool. The HIAB 170 offers a range of lifting capacities from 6,000 lbs. on the shortened boom of 5' to 2500 lbs. on a full boom of 13'. The boom length is easily adjustable through hydraulic control.

Ideal for general maintenance work, the HIAB 170 will lift up to 20' above ground level at a maximum speed of 20" per second. Control is from either side of the truck cab. Crane action is positive and accurate. 200° or 360° swing arc. When not in use, the HIAB 170 folds snugly behind the cab, taking only 15" of space. This leaves the entire truck bed open for load. Hydraulic outriggers to handle heavy loads are standard equipment.

WRITE FOR THE NAME OF YOUR NEAREST DEALER

Stance MFGS. & SALES INC.

1666 Ninth St. (Corner of Olympic & Ninth)

Santa Monica, California

For more facts, circle No. 283

New 4-wheel scraper designed for small jobs

The Construction Machinery Division of the Clark Equipment Co. announces the Michigan Model 110 4-wheel scraper.

Designed for smaller projects, for self-loading jobs, and for clean-up or finishing work, the Model 110 has a capacity of 8 cubic yards struck and 10½ yards heaped.

Teamed with a Michigan Model 180 tractor-dozer or equivalent prime mover, the Model 110 offers all-hydraulic control.

The scraper's cutting edge consists of four interchangeable and reversible sections to permit offset or straight blade arrangements. According to the manufacturer, the cutting-edge design forces a shearing action on the soil as it slides up and passes the blade: material is pulled into the bowl in smaller chunks, with fewer voids, greater payloads.

The Model 110 is 27 feet 7¼ inches long, 8 feet 4½ inches wide, and 9 feet 6 inches high. Empty weight is 14,450 pounds; fully loaded, 40,450 pounds.

For further information write to the Construction Machinery Division, Clark Equipment Co., Dept. C&E, Pipestone Road, P. O. Box 599, Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 39.

All-hydraulic control is a major feature of the Model 110. From the tractor seat, the operator simply moves short-throw levers to actuate single-acting cylinders to operate the hoist, apron, and ejector.

Blades on power trowel adjust while in motion

A new 39-inch power trowel for floating and finishing concrete slabs is offered by the Thor Power Tool Co.

The machine's adjustable blades

can be altered for proper pitch, while the machine is in motion, simply by operating a handle control. The blades measure 7 × 13 inches.

Other design features include low center of gravity, blade-center suspension, automatic clutch, and a nonrotating guard ring permitting use of the trowel within a half inch of pipes, walls, and other obstacles.

For further information write to the Thor Power Tool Co., Dept. C&E, 175 N. State St., Aurora, Ill., or use the Request Card at page 18. Circle No. 97.

Hydraulic oil filters suited to cold weather

Primarily designed for use during cold-weather operating conditions, a new series of sump-type and line-type filters, incorporating a bypass valve, is available from the Marvel Engineering Co.

Both types are offered in 10, 20, 30, 50, and 75-gpm capacities. The bypass valve is set to open at 2½ and 3 psi and remain open during the warm-up period. When the flow restriction is reduced the valve closes, permitting fluid to pass through the filtering element.

For further information write to the Marvel Engineering Co., Dept. C&E, 7227 N. Hamlin Ave., Chicago 46, Ill., or use the Request Card at page 18. Circle No. 28.

This combination gives the
LOWEST COST PER HOLE in DRILLING ANY MASONRY MATERIAL!

1 the BIT
NEW ENGLAND Cyclo-Core®
MULTI CARBIDE TIPPED ROTARY BIT

FASTEST in Concrete or Any Masonry Material

- Up to 3 times faster than other core drills
- Multi-Spiral Flutes assure positive dust removal
- All cutting edges ground
- Easier to re-sharpen . . . "Do It Yourself"
- More drilling footage

SIZES: ¾" to 6" diameter . . .

Exclusive "Starting Centers" permit pin-point positioning of bit . . . prevent "walking" when starting holes.

2 the RIG
NEW! Cyclo-Core® PORTABLE MASONRY DRILLING MACHINE
for use with Cyclo-core Carbide-Tipped Bits
NO WATER REQUIRED

MODEL 6
PAT. PEND.

- Lowest possible cost per hole using CYCLO-CORE Bits.
- Minimum set-up and knock-down time.
- Drills holes up to 6" diameter in concrete with or without rods.
- Puts sufficient pressure on cutting edges of bit.
- Manually or hydraulically operated by one man.
- Permits drilling close to walls, or in corners.
- Completely portable—easily wheeled by one man. For extreme portability unit can be completely disassembled.

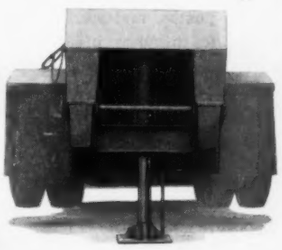
WRITE FOR DETAILS AND FREE "WHAT and HOW" DRILLING MANUAL

Designed, Engineered, and Proven for the Job.
Cyclo-Core Bits available in sizes —¼" to 6" diameter

New England Carbide Tool Co., Inc.
535 Commercial St., Medford 55, Mass.
For more facts, circle No. 284

If you want top performance and who doesn't ?

YOU NEED A
ROGERS
Hydraulically Operated
THPG HYDRAU-LIFT
Detachable Gooseneck
TRAILER



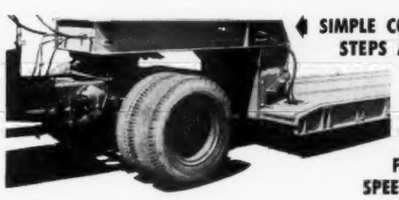
PATENT NO. 2590210

UNUSUAL PERFORMANCE in operational advantages and STRENGTH in structural design, features common to all Rogers Trailers, assure long, satisfactory service.

The new HYDRAU-LIFT Detachable Gooseneck by Rogers—the pioneer builders, provides fast, dependable, versatile performance not available in any other trailer.

Ability to detach, load the trailer and reattach the gooseneck is an outstanding feature. Man-saving simplicity of control, is greatly appreciated. Other valuable, exclusive features are incorporated.

FLAT TOP TO CARRY DIPPERS, ETC.
TAPERED DECK SIMPLIFIES LOADING



SIMPLE CONTROL SAVES STEPS AND AFFORDS VIEW OF ALL OPERATIONS
QUICK DETACHMENT FEATURES HELP SPEED OPERATIONS

Packy Says:
"Discard expensive, outdated equipment and buy a Rogers HYDRAU-LIFT with the savings."

You'll want the many advantages of a front loading trailer.

Investigate and you'll buy a ROGERS THPG Detachable Gooseneck Trailer with its exclusive patented hydraulic operation.

ROGERS BROTHERS CORPORATION
ALBION, PENNA.
Export Office / 50 CHURCH ST., NEW YORK 7, N. Y., U. S. A.
Cable Address: Brosites

For more facts, use Request Card at page 18 and circle No. 285

Ford announces tractor-loader, backhoe line

A tractor-loader package with two and a half times the lift capacity of any previous Ford loader unit has been announced by that company's Tractor and Implement Division.

The prime mover in this loader combination is an all-new industrial wheel tractor, rated at 42.5 horsepower in the gasoline model, which represents Ford's first design expressly for the industrial and medium-duty construction markets.

Along with the new tractor and loader, the company announced three models of a backhoe designed for use with the new prime mover. The backhoes will be available early next year.

The new Ford industrial tractor boasts a 7,000-pound-capacity front axle and heavy weight-bearing frame. Its strength and capacity to withstand batterings and shock loads are said to derive from a new concept of isolating such vital "components" as the operator, engine, hydraulic pumps, and steering system from the members of the tractor which take the greatest beating in field service.

A massive malleable-iron combination grille and bumper encloses the headlights, cooling system, hydraulic reservoir, and pump.

All-power steering with "feather-touch" instant response provides easy, rapid maneuverability and eliminates operator fatigue, the manufacturer reports. Operator visibility is unimpaired by cross bracing and steering rods, and other aspects of operator comfort are incorporated in the design.

Developing 42.5 horsepower at the drawbar in gasoline models, the new unit is also offered with diesel engine.

Dimensions are as follows: wheelbase, 81.5 inches; length, 128 inches; width, 69.2 inches; height, 57 inches; weight, 3,800 pounds.

Two models of the tractor are available. The Model 1821 is a standard-equipped unit; the Model 1841 also features power takeoff and an internal hydraulic system with 3-point linkage for rear-attached equipment.

The new Ford Super-Duty Series 712 loader has 2,500-pound capacity, 5,500-pound breakaway limit, a lift height of nearly 11 feet, dump height

of 8 feet 5 inches, and material-bucket sizes of ⅝ or ¾ cubic yard. Bucket sizes up to a full cubic yard are also available.

The Series 713 backhoes, experimental models of which were shown at a recent unveiling of the new tractor-loader, will be available in models with 10, 12, and 14-foot digging depths. All will feature a 185-degree swing radius, powerful down crowd, and fast cycle time, the company reports. Capacities for the three models will be 4½, 6, and 7 cubic feet, respectively.

The new tractor and loader are now in production; the backhoes are scheduled for production early in 1959.

For further information on this new industrial line write to Tractor and Implement Division, Ford Motor Co., Dept. C&E, 2500 E. Maple St., Birmingham, Mich., or use the Request Card that is bound in at page 18. Circle No. 112.

WISCONSIN
Engineered
for best performance

WHEN an original equipment manufacturer *engineers* a Wisconsin Engine into a product . . . *equipment builder* and *user* benefit. The manufacturer builds goodwill and repeat sales. The user gets the ultimate in power *dependability* and *constant* power *delivery* under roughest, toughest conditions . . . brought about by such features as tapered roller bearings at both ends of the crankshaft, positive lubrication requiring less watching and a heavy-duty outside magneto, shielded from the weather.

The Clipper Hot Pour Contraction Joint Sealer, made by Clipper Mfg. Co., Kansas City, Missouri, for highway and airfield work, is typical of the units that are "Wisconsin Engineered" for best performance.

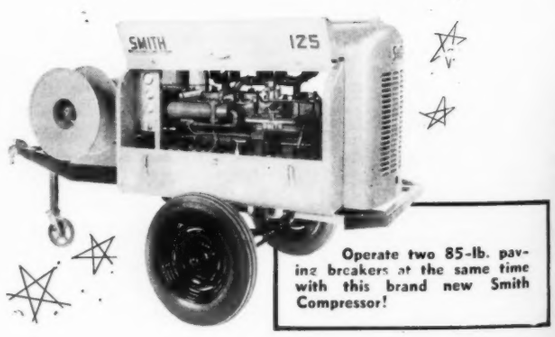
Look for the name "Wisconsin" before you buy . . . dominant power in the 3 to 56 hp field. And write for bulletin S-223 describing all models. Electric starting equipment available on all engine models.

More than 2,000 service stations . . . one or more near you.

WISCONSIN MOTOR CORPORATION

For more facts, use Request Card at page 18 and circle No. 286

Announcing the New Smith 125



Operate two 85-lb. paving breakers at the same time with this brand new Smith Compressor!

This newest member of the Smith family of compressors is built with a heavy-duty industrial type 6-cylinder engine. Three cylinders are for power; three for compression. The Smith 125 is a trouble-free compressor with a minimum of gaskets and gadgets.

The Smith "Governair" regulates air supply to air demand for economy and long life. You have lower first cost, lower operating cost and lower maintenance cost because of sound engineering and simple, compact design.

Write today for complete details on the new Model 125-P and also other Smith Compressors in portable and stationary models from 45 to 220 cfm.

GORDON SMITH & COMPANY, INC.
483 College Street
Bowling Green, Kentucky

For more facts, use Request Card at page 18 and circle No. 287

One of the new Eskridge line, this 13-wheel 30-ton compactor can turn within a circle of 26-foot-radius. The vertical oscillation of each wheel gives equal compaction over the terrain.

Self-propelled, multi-tire oscillating compactors

A new line of self-propelled compactors is announced by the Eskridge Equipment Co.

The machines are offered in sizes from 9 to 30 tons, with from 9 to 15 oscillating wheels.

On these units, a swivel seat permits the operator to face either forward or rear and to steer in either direction. The entire machine can turn within a 26-foot-radius circle, according to the manufacturer. Full-hydraulic steering is a feature. The ballast compartment is designed to take sand, gravel, or water.

A Continental gasoline engine supplies the power.

For further information write to the Eskridge Equipment Co., Dept. C&E, 1214 S. Norwood Ave., Tulsa 12, Okla., or use the Request Card at page 18. Circle No. 43.

Payroll tax calculator saves computing time

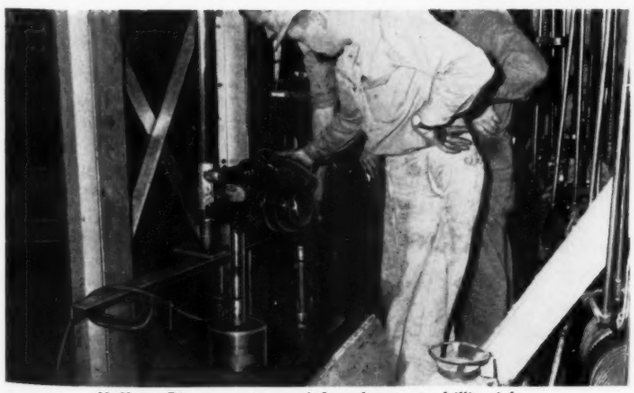
The Calcu-Tax Corp. announces a device said to substantially reduce the time required to prepare weekly payrolls.

The Calcu-Tax shows withholding tax and the new 2½ per cent Social Security deductions (and, optionally, New York State Disability) all on one line for wage brackets up to $250.

According to the manufacturer, there are no pages to turn, no calculations to perform, and no special skill or practice is required to use the device.

For further information write to the Calcu-Tax Corp., Dept. C&E, 49 W. 37th St., New York 18, N. Y., or use the Request Card at page 18. Circle No. 92.

This Thin Wall Bit
CAN EASILY MEAN
EXTRA PROFITS
TO YOU



Hoffman Bit cuts costs on reinforced concrete drilling job

HOFFMAN Thin Wall CORE BITS

Fast, easy drilling through hardest materials such as reinforced concrete, fused quartz, etc. make Hoffman Thin Wall Bits ideal for foundation sampling, drilling mounting holes or for conduit openings. They drill holes to exact size the first time . . . eliminate digging, chipping, forming . . . speed the work . . . save on extra materials and equipment. Surface Set or Impregnated . . . in standard O.D. sizes from 1" to 12" . . . Hoffman Thin Wall Core Bits assure true drilling accuracy and economy.

A Hoffman Bit cut right through the steel bars and heavy aggregate to produce this core from reinforced concrete.

Drilling Experts Since 1902

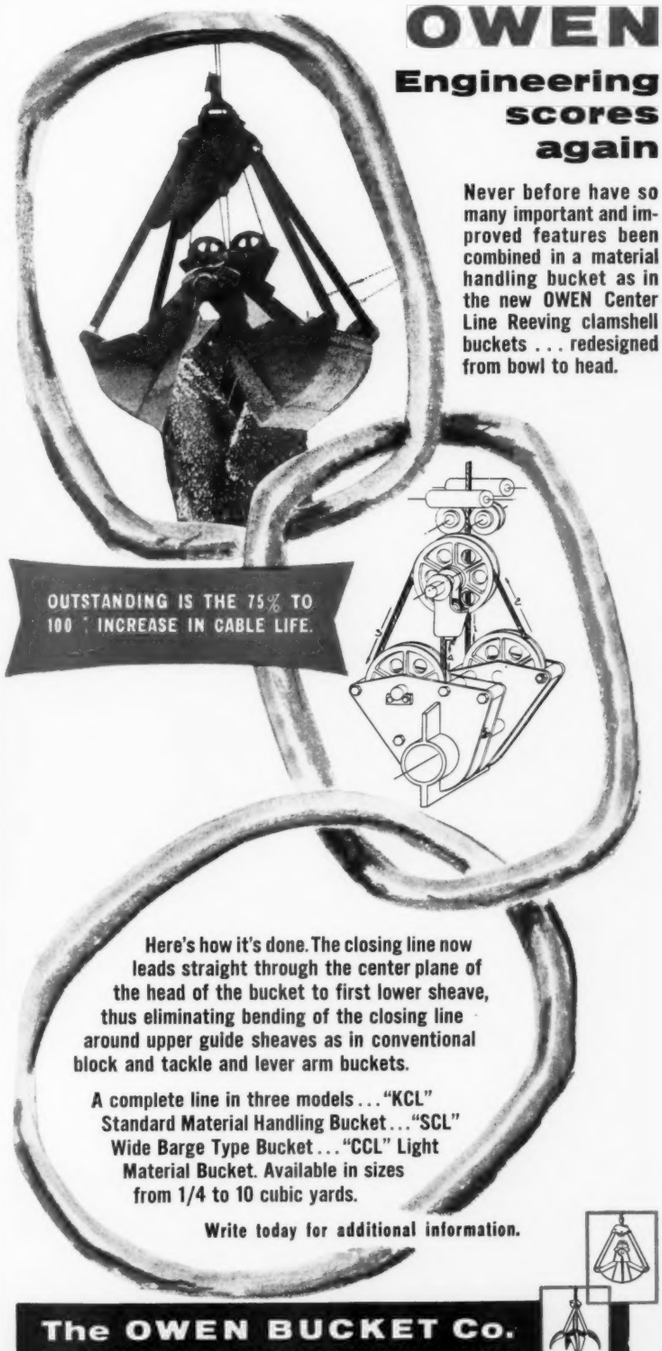
Write for illustrated copy of Hoffman Bit Catalogue—FREE

HOFFMAN BROS. DRILLING CO.
Box 426 Punxsutawney, Penna.

For more facts, use Request Card at page 18 and circle No. 288

OWEN
Engineering scores again

Never before have so many important and improved features been combined in a material handling bucket as in the new OWEN Center Line Reeving clamshell buckets . . . redesigned from bowl to head.



OUTSTANDING IS THE 75% TO 100% INCREASE IN CABLE LIFE.

Here's how it's done. The closing line now leads straight through the center plane of the head of the bucket to first lower sheave, thus eliminating bending of the closing line around upper guide sheaves as in conventional block and tackle and lever arm buckets.

A complete line in three models . . . "KCL" Standard Material Handling Bucket . . . "SCL" Wide Barge Type Bucket . . . "CCL" Light Material Bucket. Available in sizes from 1/4 to 10 cubic yards.

Write today for additional information.

The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO
BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

For more facts, use Request Card at page 18 and circle No. 289

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

WISCONSIN TILT TRAILER

CHOSEN BY COMPARISON

Efficient . . . 1-man operation Economical . . . low as $895. Big Capacity 3-16 ton

Safe . . . Wide Oak Deck

Durable . . . Exclusive rear channel mounting, prevents tearing away. 8 extra braces inside frame.

Low loading angle . . . No blocks, skids, or ramps needed.

All wiring enclosed

Model 1000
10 ton—only $1140. fob factory, w/tires & deck, plus tax.

Automatic Hydraulic Deck Control—"EASY UP" "EASY DOWN"
Write for details & name of dealer.

WISCONSIN TRAILER CO. 1949 N. 121st St. Milwaukee 13, Wis.

For more facts, use Request Card at page 18 and circle No. 290

A major feature on the Model S-12 rear-dump is the interchangeability of all tractor and trailer tires. In addition, trailer tires, wheels, and brake parts are interchangeable with those on the Euclid Model S-12 scraper.

Announce new rear dumper with variable wheelbase

The Model TS-1622 rear-dump, variable wheelbase trailer, designed for use with the Euclid Model S-12 tractor, is available from the Easton Car & Construction Co.

This tractor-trailer combination, designated Model S-12 rear-dump, can turn within a width about equal to its 28-foot 8-inch length when the trailer is in travel position. In dump position, the wheelbase is shortened by 5 feet 6 inches, which permits the unit to turn within a width of 24 feet.

All tractor and trailer tires are interchangeable, and the trailer tires, wheels, and brake parts are interchangeable with those on the Euclid Model S-12 scraper.

The trailer has a rated capacity of 22 tons, based on material weighing 2,700 pounds per cubic yard. Easton's new single-stage, double-acting body hoist is said to provide fast, smooth, and fully controlled action through the entire dumping cycle.

For further information write to the Easton Car & Construction Co., Dept. C&E, Easton, Pa., or use the Request Card at page 18. Circle No. 40.

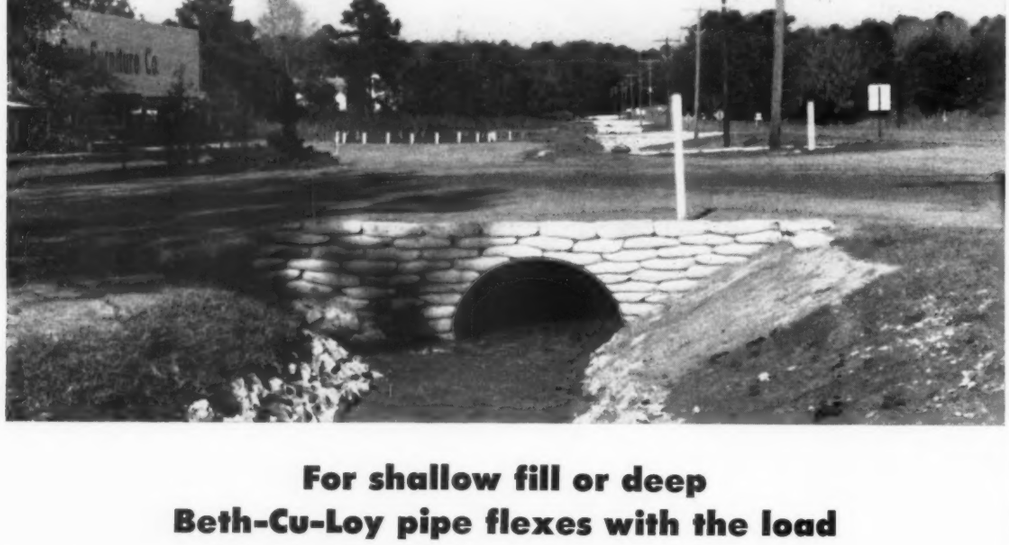
Brooms for clean-up, snow-removal, other work

Brooms designed for Jeep vehicles are offered by Sweepster, Inc.

Available for old and new Jeeps, cab-forward Jeep trucks, and practically all makes of tractors, the brooms are furnished with power hydraulic systems and a simple hand-crank adjustment for regulating sweeping pressures. Easy to install, they are recommended for such applications as clean-up, blacktop patching, and snow-removal work.

The brooms are offered in sizes of 5, 5½, and 6 feet. Brush diameter is 32 inches; sweeping path, 12 inches less than broom width; sweeping angle, 31 degrees right side. The lift height is 12 inches, and brush speed is 150 to 300 rpm. Drive is power-takeoff.

For further information write to Sweepster, Inc., Dept. C&E, 13900 Livernois, Detroit 38, Mich., or use the Request Card at page 18. Circle No. 71.



For shallow fill or deep Beth-Cu-Loy pipe flexes with the load

Because galvanized corrugated Beth-Cu-Loy pipe is made of steel sheets, it is not only strong, but flexible. So whether the fill is shallow or deep, a Beth-Cu-Loy pipe has the unique ability to "give" with the fill and transmit the load around its entire periphery.

Rigid pipe cannot flex with the load, and thus is unable to transfer any appreciable portion of the load to the surrounding material. The bulk of the pressure is exerted through the vertical axis of the pipe. That's why many states actually specify the use of sheet metal pipe such as Beth-Cu-Loy under fills of less than 2 ft or more than 15 ft.

Flexibility, of course, is only one advantage of galvanized Beth-Cu-Loy culvert drainage pipe. The zinc coating (2 oz triple spot test) provides long resistance to corrosion. The pipe's light weight permits easy handling and quick installation of long pipe lengths, and reduces shipping costs. Field joints can be made in minutes, with no time out for setting or curing.

Bethlehem does not manufacture culvert pipe, but does supply Beth-Cu-Loy (copper-bearing steel) sheets to pipe fabricators. If you would like further information about Beth-Cu-Loy, or the pipe made from it, ask your fabricator for a copy of Bethlehem Booklet 425-A.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

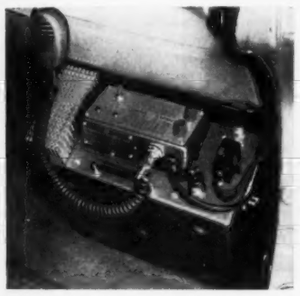
For more facts, use Request Card at page 18 and circle No. 291

A GVW rating of 25,000 pounds and a 218-hp V-8 engine are features on this new Dodge D700 dump truck. A 5-speed synchro transmission with power-takeoff openings on both sides is standard on the D700. A 3-speed auxiliary transmission and air brakes are also available. For further information about the D700, write to the Dodge Division, **Chrysler Corp.**, Dept. C&E, 7900 Jos. Campeau, Detroit, Mich., or use the Request Card at page 18. Circle No. 107.

Mobile radio equipment is transistor-powered

New 2-way radio equipment is announced by General Electric.

The units contain transistor power for both transmitter and receiver, and are available either for mounting in the front of a car or truck, or for placement in a vehicle's trunk. They may be used in low band frequencies (25 to 54 mc), high band (144 to 174 mc), and UHF (450 to 470 mc).



For further information write to General Electric Communication Products Department, Dept. C&E, Charles Bldg., P. O. Box 221, Liverpool, N. Y., or use the Request Card at page 18. Circle No. 10.

Jacks raise equally, operated by one man

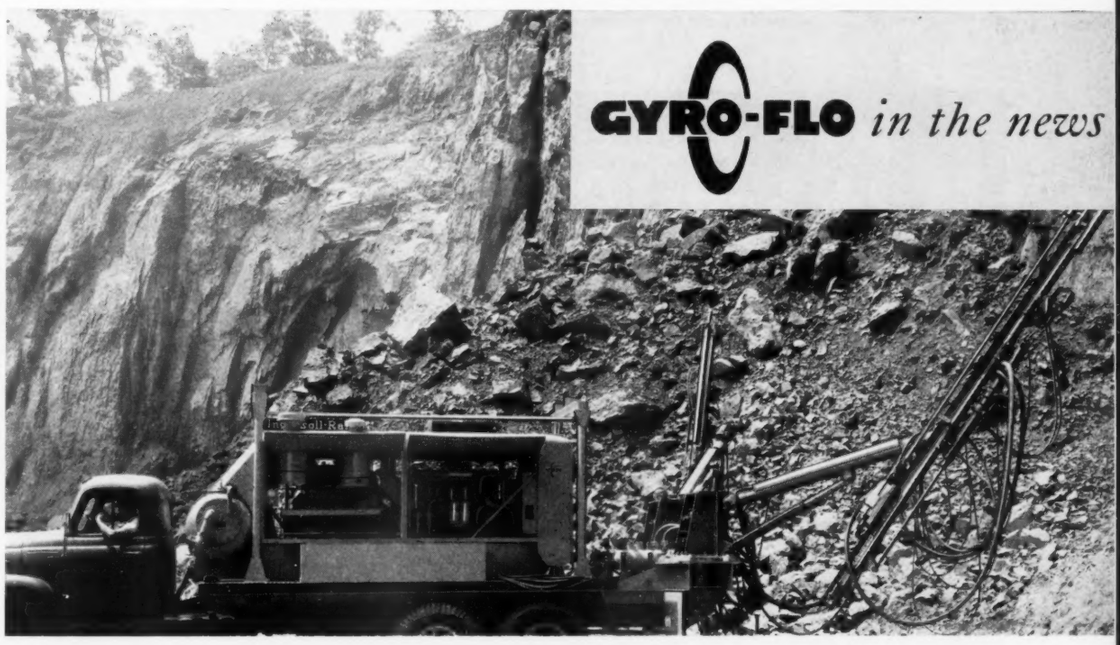
A portable system of hydraulic jacks, which raise equally when operated by one man from a central control panel, is announced by Modern Hydraulics, Inc.

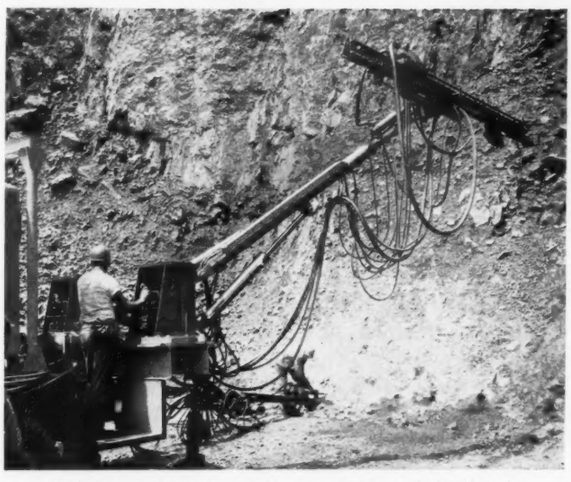
Each jack has a rated capacity of 15 tons, with a safety factor of 2. By unification of hydraulic pressure, one jack can raise 15 tons while another jack, operating from the same unit but carrying no weight, will raise at precisely the same level.

The 13-jack system measures 7×9 feet and is constructed on a deck which fits on any 1-ton truck body. Systems in other sizes are available to meet specific requirements.

The systems may be powered by takeoff from truck engine or from a self-contained power source.

For further information write to Modern Hydraulics, Inc., Dept. C&E, 130 W. Grand Lake Blvd., West Chicago, Ill., or use the Request Card at page 18. Circle No. 99.





▲ High holes, horizontal or at any angle, are no problem at all with this truck-mounted drilling rig. Operator at the control station can "spot" the drill anywhere he wants at the touch of a throttle.

▼ Photo below shows that toe holes are "duck soup" for this Gyro-Flo 900 and Hydra-Boom combination.

Truck-Mounted Drilling Rig Helps Contract Driller Meet Deadline Dates

"Take a highway truck chassis, add a 900-cfm Gyro-Flo compressor and two I-R Hydra-Boom units equipped with two D45, 4½" Bore drifter drills, and you're in business with the fastest contract-drilling unit you ever saw." So says an official of the New Jersey Drilling Co., who admits that this is a slight oversimplification. "Some planning and good design went into this rig, too. The I-R distributor and sales engineer sure did a fine job on this rig."

The truck-mounted drilling rig shown here has lived up to his every expectation—helped him finish up faster and meet the tightest deadlines with a minimum of man-hours and drilling expense.

GYRO-FLO 900 PROVIDES AMPLE AIR POWER

A standard 900-cfm Gyro-Flo rotary portable compressor, less running gear, was mounted on a 6-wheel highway truck chassis. There was plenty of room available to mount two Hydra-Boom drills. The completely self-contained compressor provides ample air power for any job—will run both heavy-duty drills simultaneously at full pressure. The rig can move from job to job at a moment's notice and at maximum highway speeds. A frame above the compressor holds the drill towers while in transit.

HYDRA-BOOMS CONVERT SETUP TIME TO DRILLING TIME

With two heavy-duty I-R D45 rock drills mounted on Hydra-Booms, the New Jersey Drilling Co. can set up to drill any type of hole patterns in a matter of minutes. All drill-tower motions, including power dump and swing and power cone, are controlled by the touch of a throttle. Husky hydraulic cylinders, five for each drill, have completely replaced the time-consuming muscle power formerly required to set up for each hole.

Ask your Ingersoll-Rand representative to show you how Gyro-Flo compressors and I-R rock drills can help speed *your* drilling work, with important savings in cost per foot of hole.

Ingersoll-Rand
2-835 11 Broadway, New York 4, N.Y.

AN UNBEATABLE COMBINATION . . . GYRO-FLO COMPRESSORS AND I-R ROCK DRILLS

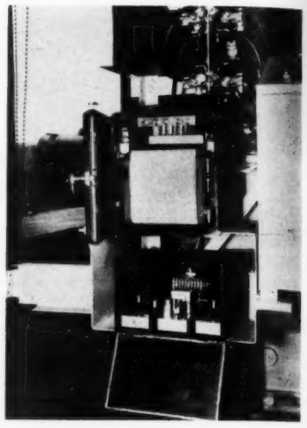
For more facts, use Request Card at page 18 and circle No. 292

Cutting transverse control joints, two Eveready 36-hp self-propelled concrete saws are at work on a new 9-mile stretch of U. S. 31 between Holland and West Olive, Mich. According to the company, plans are for all control joints to be sawed with Eveready concrete saws and 4-ply reinforced Tuffie abrasive blades that are specially designed for sawing of expansion joints in green concrete. General contractor on the job is Carl Goodwin & Sons, of Allegan, Mich. For further information write to the **Eveready Brik-Saw Co.**, Dept. C&E, 1104 Union Ave, Kansas City 1, Mo., or use the Request Card that is bound in at page 18. Circle No. 9.

New batch plant features autographic recorders

A new electrically controlled high-speed batch plant, featuring pre-assembly as well as autographic strip chart recorders, is available from the Blaw-Knox Co.

Hourly production of the plant is said to be at least 180 highly accurate 1⅜-cubic-yard batches. Another feature of the plant is that aggregate materials—as many as four—are weighed at the same time in separate hoppers and then discharged to batch trucks.



This is a close-up of the new batch plant's two-pen autographic strip chart recorder employed with the Blaw-Knox Model EC1B2 automatic cement batcher. A 12-inch-wide chart registers data necessary to meet U. S. Army Corps of Engineers specifications for airport concrete paving.

The plant's aggregate bin, designed for portability and rapid erection and dismantling, features a 150-ton capacity. The aggregate batcher's autographic strip chart recorder features a time and date stamp, batch identification stamp, printing batch counter, and intermittent chart drive.

For further information write to the Blaw-Knox Co., Dept. C&E, P. O. Box 1198, Pittsburgh, Pa., or use the Request Card that is bound in at page 18. Circle No. 6.

Truck-crane winch aids in below-grade work

A new winch for the one-man-operated, full-hydraulic Hiab Model 170 truck crane, an optional piece of equipment adapted to crane booms for below-grade work, is announced by Stanco Mfgs. & Sales, Inc.

Normally, the Hiab 170 will lift up to 20 feet above ground level at a maximum speed of 20 inches per second. With the addition of the winch, the crane will now work below ground level at the same capacities, the company reports.

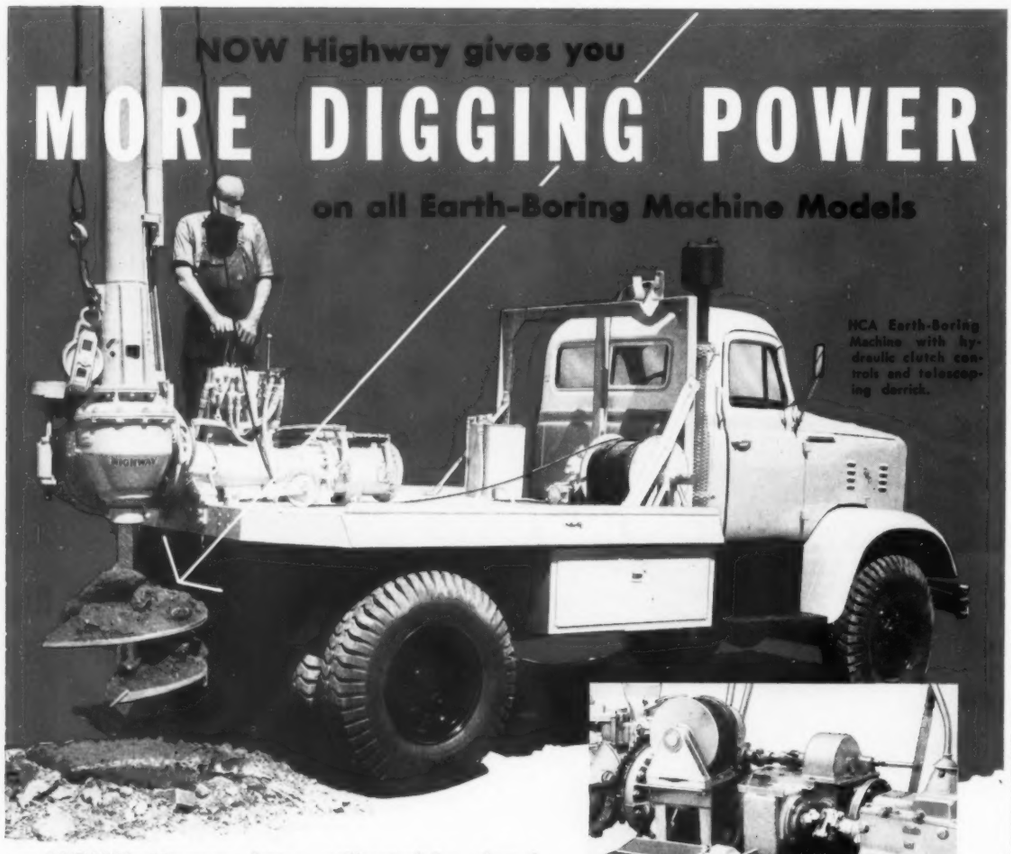
The winch-equipped Hiab 170 truck crane requires only 15 inches of mounting space between the cab and the truck bed.

For further information write to Stanco Mfgs. & Sales, Inc., Dept. C&E, 1666 Ninth St., Santa Monica, Calif., or use the Request Card at page 18. Circle No. 67.

NOW Highway gives you

MORE DIGGING POWER

on all Earth-Boring Machine Models



HCA Earth-Boring Machine with hydraulic clutch controls and telescoping derrick.

Integral Winch takes power directly from the transmission and allows all speeds of transmission to be used.

The new Highway adjustable clutch provides more speed and more power. Easy field adjustment saves you costly down-time and shop maintenance. Stronger shift shafts give more pressure on the clutch with less control pressure.

NOW! Heavy-duty adjustable clutch and integral winch on all skid-mounted and truck-mounted diggers

Now Highway gives additional digging power on all its earth-boring machine models for fast, easy digging in any soil. The HDA and HCA models derive their power from the truck engine and permit holes to be dug in all truck transmission speeds. Mount on any vehicle with sufficient capacity to handle the weight and operate the machine. Highway earth-boring machines are available in sizes to dig holes up to 36" in diameter and to an average depth of ten feet. Available with manual or hydraulic clutch controls. Find out how Highway's earth-boring machines can save you time and money. See your Highway representative now — or write directly to Highway Trailer Company for illustrated brochure.

UTILITY DIVISION

HIGHWAY TRAILER COMPANY

HEADQUARTERS: EDGERTON, WISCONSIN

Manufacturers of: Public Utility Bodies • Earth-Boring Machines • Pole and Cable Reel Trailers • Winches • Power Take-Offs • Service Accessories • Commercial Trailers • Trailerized Tanks and Dry-Bulk Haulers • Cargo Containers — Land, Sea and Air

SALES AND SERVICE IN PRINCIPAL CITIES

HIGHWAY®

For more facts, use Request Card at page 18 and circle No. 293

Applying the principle of screw conveying to the entire unloading-loading operation, the Rex car unloader reportedly can empty a 400-barrel railroad car in 40 to 50 minutes, load a 10-ton truck in 4 to 6 minutes.

For more data on any item described in this section, circle indicated number on card at page 18.

SWENSON SPREADERS
FOR ICE CONTROL

SPREADS SALT 200 LBS. PER MILE
OR IN ANY DESIRED AMOUNT
Lays a Narrow Strip or Full Traffic Lane

Handles all granular materials — salt, cinders, sand, calcium chloride, rock chips. Spreads at speeds up to 30 M.P.H. Clutch-controlled flow: steady or intermittent for hills and intersections.

Write for complete information

SWENSON SPREADER & MFG. CO.
LINDENWOOD, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 294

Railroad car unloader gets cement out fast

A new unit for unloading cement from railroad cars is offered by the Chain Belt Co.

This Rex car unloader, applying the principle of screw conveying to the entire unloading-loading operation, reportedly can unload a 400-barrel car in 40 to 50 minutes, and load a 10-ton cement truck in 4 to 6 minutes.

The cement handling is done entirely by just two screws. A horizontal screw runs from under the car hopper to a transfer point where the vertical screw takes over to convey the cement to the top for discharge into the truck-loading spout.

The unit is powered by a 60-hp gasoline engine operating at 1,200 rpm.

Screws are available in sizes of 9, 10, 12, or 14 inches.

For further information write to the Chain Belt Co., Construction Machinery Section, Dept. C&E, 4701 W. Greenfield Ave., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 8.

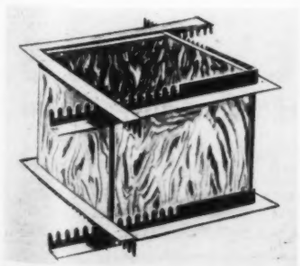
Square concrete columns formed by new clamp

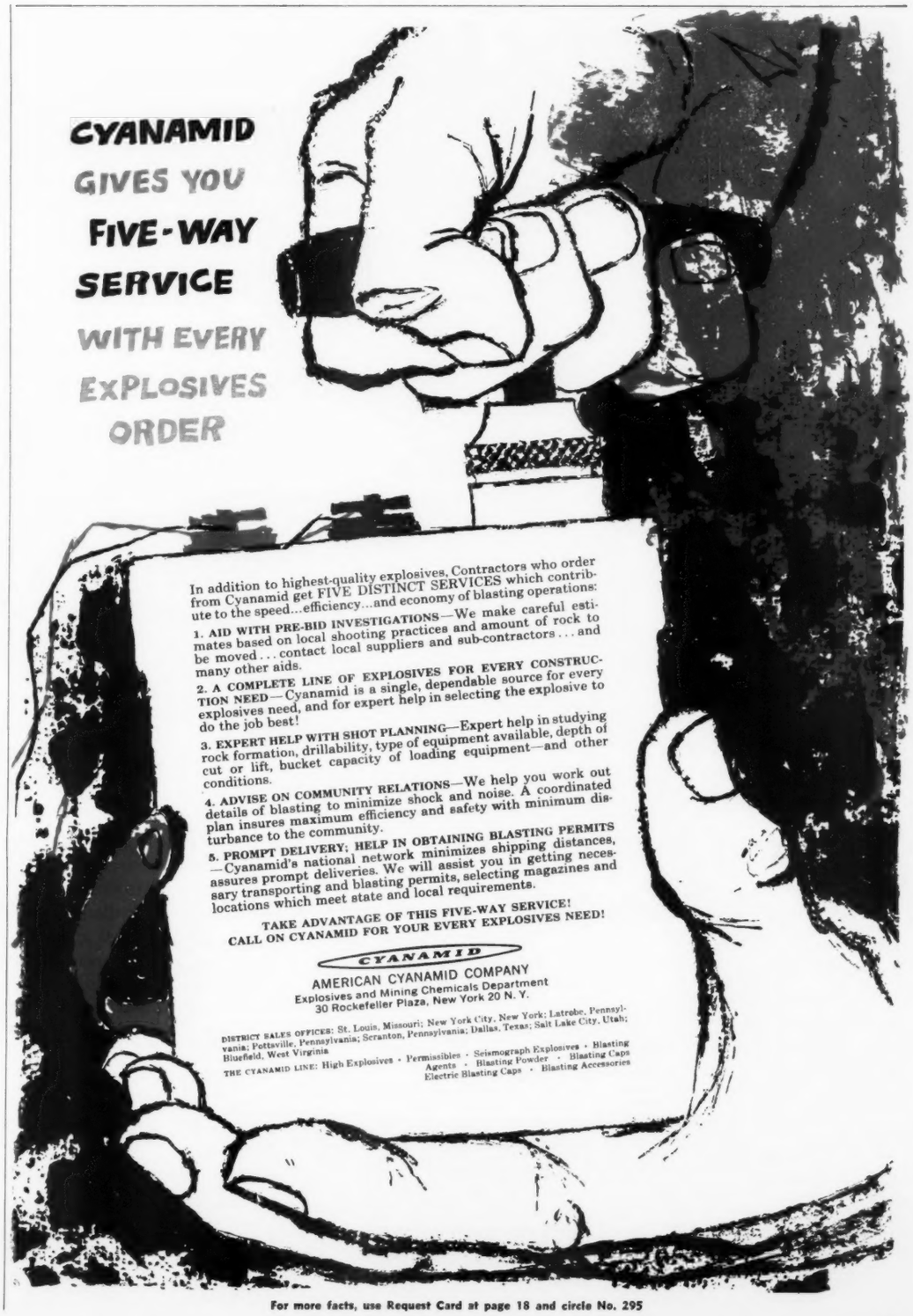
The Deslauriers Column Mould Co. announces its new Econ-O-clamp for forming square concrete columns.

Standard-size clamps will form columns measuring from 10×10 inches to 24×24 inches, or any combination of these column dimensions. Larger sizes are also available.

A hammer is the only tool needed to set Econ-O-clamps, and there are no accessories or separate parts.

For further information write to the Deslauriers Column Mould Co., Dept. C&E, 5036 W. Lake St., Chicago 44, Ill., or use the Request Card that is bound in at page 18. Circle No. 96.





In addition to highest-quality explosives, Contractors who order from Cyanamid get FIVE DISTINCT SERVICES which contribute to the speed...efficiency...and economy of blasting operations:

1. **AID WITH PRE-BID INVESTIGATIONS**—We make careful estimates based on local shooting practices and amount of rock to be moved . . . contact local suppliers and sub-contractors . . . and many other aids.
2. **A COMPLETE LINE OF EXPLOSIVES FOR EVERY CONSTRUCTION NEED**—Cyanamid is a single, dependable source for every explosives need, and for expert help in selecting the explosive to do the job best!
3. **EXPERT HELP WITH SHOT PLANNING**—Expert help in studying rock formation, drillability, type of equipment available, depth of cut or lift, bucket capacity of loading equipment—and other conditions.
4. **ADVISE ON COMMUNITY RELATIONS**—We help you work out details of blasting to minimize shock and noise. A coordinated plan insures maximum efficiency and safety with minimum disturbance to the community.
5. **PROMPT DELIVERY; HELP IN OBTAINING BLASTING PERMITS**—Cyanamid's national network minimizes shipping distances, assures prompt deliveries. We will assist you in getting necessary transporting and blasting permits, selecting magazines and locations which meet state and local requirements.

TAKE ADVANTAGE OF THIS FIVE-WAY SERVICE!
CALL ON CYANAMID FOR YOUR EVERY EXPLOSIVES NEED!

CYANAMID
AMERICAN CYANAMID COMPANY
Explosives and Mining Chemicals Department
30 Rockefeller Plaza, New York 20 N. Y.

DISTRICT SALES OFFICES: St. Louis, Missouri; New York City, New York; Latrobe, Pennsylvania; Pottsville, Pennsylvania; Scranton, Pennsylvania; Dallas, Texas; Salt Lake City, Utah; Bluefield, West Virginia

THE CYANAMID LINE: High Explosives · Permissibles · Seismograph Explosives · Blasting Agents · Blasting Powder · Blasting Caps · Electric Blasting Caps · Blasting Accessories

For more facts, use Request Card at page 18 and circle No. 295

Offer new truck-loading portable bin unit

Light weight and compactness, giving it extreme portability with practically no setup time required, are reported features of a new 6-cubic-yard portable bin unit announced by Pioneer Engineering.

Designed to provide a quick-discharge surge-hopper for truck loading from portable crushing and screening plants, the new unit can be increased to 8 and 10-yard bin capacities by the addition of bin extensions.

Each unit consists of a 7-foot 6-inch square steel bin and a 30-inch-wide×21-foot-long channel frame conveyor, mounted on a 2-axle truck frame with pneumatic tires. The delivery conveyor can be folded for ready transport and quickly swung back into operating position when loading resumes, the manufacturer reports.

For further information write to Pioneer Engineering, Division of Poor & Co., Inc., 3200 Como Ave. S. E., Minneapolis, Minn., or use the card at page 18. Circle No. 49.

The surface density or moisture measurement is taken on the job site by turning on the scaler, adjusting the high voltage, and setting the timer for a one or two-minute operation. No special skill is required to perform the tests.

Portable gages measure surface density, moisture

Two new d/M-gage probes, offered by Nuclear-Chicago, permit rapid determination of moisture content and density on the surface level.

With the Models P21 and P22, no field laboratory, scales, or drying ovens are needed. No technical skill is required to perform tests, and one person reportedly can arrive at precise moisture and density determinations in as little as two minutes.

Both portable units may be used interchangeably with the Model 2800 portable scaler. The probes measure a semispherical volume of material with a depth varying from approximately 3 to 8 inches inversely with moisture content or density.

For further information write to the Nuclear-Chicago Corp., Dept. C&E, 229 W. Erie St., Chicago 10, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 102.

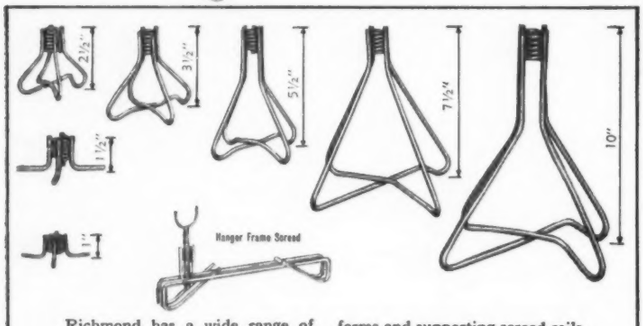
FREE-FIT Screed Bases

Richmond ½" and ¾" screed bases now available in alternate Free-Fit Type for adjustment without turning cradle head.

- Free-Fit Collar permits free passage of ½" or ¾" cradle head as needed.
- Can be adjusted for height simply by turning the Jam Lagnut.
- Screed holder is re-usable.

A recent addition, Richmond's Free-Fit Screed Bases are essentially rugged, dependable supports that are easily adjustable and will maintain the required height. They have been designed to support pipe or T-bars without deflection under heavy loads and are stable enough to withstand severe screeding action.

This type of unit is especially handy for use on structural steel beams of bridge decks where it is desireable to tack-weld the screed base to the steel. Adjustment is readily possible with the free-fit assembly.



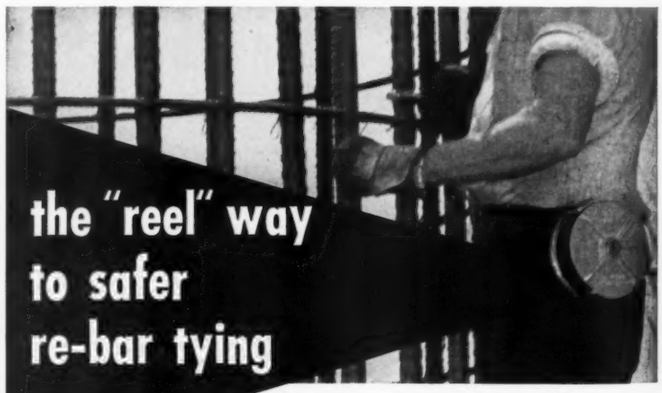
Richmond has a wide range of adjustable screed base sizes. They can be used for hand screeds, vibratory screeds and have been adapted for heavy power screeds. Hanger Frame Screeds are designed to do a two-fold job of hanging forms and supporting screed rails. Spans up to 36 feet have been screeded with these devices. Whatever the type or size, all Richmond screeding devices provide the extra strength that saves money and assures a better job.

There are more than 400 items in Richmond's line of engineered form tying devices, anchorages and accessories . . . Richmond's 47 years of experience stands behind them. It pays to use them. Send for your Richmond Handbook describing the full line. For your copy, or for help on a specific concreting problem—

Write to: Richmond Screw Anchor Company, Inc.
816-838 Liberty Ave., Brooklyn 8, N.Y.
or 315 South Fourth St., St. Joseph, Mo.

INSIST ON RICHMOND
.... AND BE SURE
IT'S RICHMOND
Richmond
SCREW ANCHOR CO., INC.
816-838 LIBERTY AVE., BROOKLYN 8, N.Y.
315 SOUTH FOURTH ST., ST. JOSEPH, MO.

For more facts, use Request Card at page 18 and circle No. 296



Once your workers have used CF&I Cal-Tie Wire in the handy belt-borne dispenser they are "sold" on its safety and convenience. For it eliminates the dangers associated with carrying clumsy shoulder coils.

Work in close quarters is made easier, for there is no cumbersome coil to catch on protruding objects—no loose wire ends to cause costly eye and face injuries—no kinky, half-used or discarded coils to trip workers.

On your next project try Cal-Tie Wire in the new CF&I handy reel dispenser. Learn how safe, efficient and economical it is to use. Cal-Tie Wire Coils weigh approximately four pounds and are available in 14- through 20-gage wire. For full details contact the nearest sales office listed below.

CF&I **CAL-TIE® WIRE**
THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise Butte • Denver • El Paso • Ft. Worth • Houston • Kansas City • Lincoln (Neb.) • Los Angeles • Oakland Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco • San Leandro Seattle • Spokane • Wichita • WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo Chicago • Detroit • New Orleans • New York • Philadelphia • CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg 5688

For more facts, use Request Card at page 18 and circle No. 297

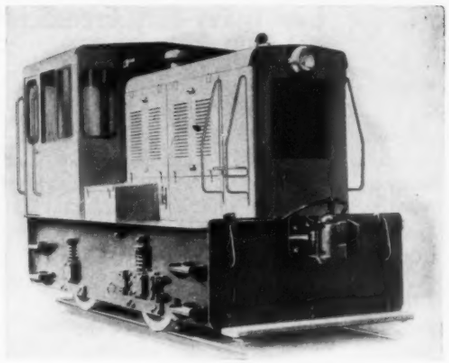
Diesel locomotives in sizes up to 40 tons

Custom-designed diesel-electric and diesel-hydraulic locomotives in 5 to 40-ton sizes, and in track gages from 21 to 56½ inches, are announced by Rogers Bros. Corp.

A torque converter and a power-shift transmission that makes manual shifting unnecessary are features. Controls are designed to permit safe operation by unskilled workers, according to the manufacturer.

Available is a complete line of related accessories, including a newly designed fume scrubber to permit the use of the locomotives in buildings, tunnels, and other confined areas.

For further information write to Rogers Bros. Corp., Dept. C&E, 108 Orchard St., Albion, Pa., or use the Request Card that is bound in at page 18. Circle No. 5.

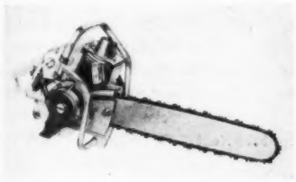


Each locomotive features a powerful high-torque diesel engine, an efficient torque converter, and a power-shift transmission that eliminates manual shifting.

Direct-drive chain saw has 30-inch guide bar

A new direct-drive Titan chain saw is offered by the Propulsion Engine Corp.

Designated Series 4900, the unit is said to feature higher cutting speed and greater ease in handling.



It is equipped with an all-position, fuel-pump carburetor; right-hand starter; safety throttle lock; and guide-bar length up to 30 inches. Power is supplied by a 4.7-cubic-inch-displacement engine.

The unit weighs approximately 21 pounds.

For further information write to the Propulsion Engine Corp., subsidiary of Food Machinery & Chemical Corp., Dept. C&E, 311 Marion Ave., South Milwaukee, Wis., or use the card at page 18. Circle No. 103.

DIGGING CHISEL

FROST WEDGE

Brunner & Lay

FROST TOOLS

...keep tight winter-schedule jobs moving

Frozen ground gives away easily to the scientifically shaped Brunner & Lay Frost Tools. Few air tool accessories save as much time and labor when winter comes. 76 years of forging and heat treating experience say they're better. Delivered from warehouses and dealers from coast to coast. Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. 76 progressive years. Sales and shop service: Albuquerque; Asheville; Birmingham; Dallas; Denver; Los Angeles; Sacramento; Seattle; Philadelphia; Portland; Lachine, P.Q.

There's a complete line—write for free bulletin T-11-3.

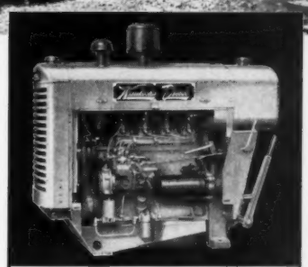
Brunner & Lay Products

CARBIDE ROK-BITS • INTRASET STEEL • DRILL RODS • COUPLINGS, ADAPTERS & SECTIONAL STEEL AIR TOOL ACCESSORIES—MOIL POINTS, CLAY SPADES, ASPHALT CUTTERS, etc.

For more facts, use Request Card at page 18 and circle No. 298

REICH *drills* either way

ROTARY or DOWN-THE-HOLE with



Powerful Waukesha Utility Four—Model 180-DLCU Diesel—four cylinder, 3½-in. bore x 3¾-in. stroke, 144 cu. in. displacement, counterbalanced crankshaft.

WAUKESHA *Diesel* **POWER**

The *small* rig that's designed for down-the-hole tool drilling of holes up to 6½-in. diam. in hard rock—the Waukesha Diesel-powered, Model C-250 Reich Drill is said to be the only machine of its kind in the world. It does the work of small hard rock rigs that drill with drifters; and large hard rock machines that drill with down-the-hole tools. But the Reich is only half the size... and half the cost...of large machines. The makers, Reich Bros. Mfg. Co., Terre Haute, Ind., gave the drill an equally versatile power unit. The Waukesha 180-DLCU has special Diesel design characteristics including the patented spherical combustion chamber which gives lively responsive acceleration, smoothness of operation, and clean burning with high economies both of maintenance and fuel. Get the details of Waukesha dependability in Bulletin 1627.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES 399

For more facts, use Request Card at page 18 and circle No. 299

New heavy-duty Gradall makes bow

A big new Gradall excavator with more than twice the performance capacity of the existing model was unveiled to construction industry editors late last month by the Warner & Swasey Co., and is now in production.

Thoroughly field tested for almost a year, the new model G-100 is a 1¼-yard all-hydraulic machine incorporating all the familiar Gradall features, but introduced as "new from the ground up". Because of its larger size, increased power, and various new features, it is expected to have wide application in the heavy-construction field.

The digging of trenches to 23-foot depth is now possible with the long boom extension. Large sewer pipe can be handled and placed; lifting capacity is up to 14,000 pounds. Large amounts of dirt can be moved quickly. A 360-degree swing means faster production in all kinds of work.

The new Gradall has a boom tilt of 120 degrees, with 360-degree boom tilt available as an optional feature.

The new G-100 Gradall has a standard reach of almost 31 feet and a digging depth of 17 feet. Boom extensions increase these capacities to 47 and 23 feet, respectively.

Two 100-hp diesel or gasoline engines provide power and make engine part replacement simpler than with a single 200-hp engine, according to the manufacturer. Six individual hydraulic pump sections serve the five arm action movements simultaneously and provide an extra hydraulic circuit for the operation of special attachments such as clamshells, augers, or grapples.

The operator's cab has been designed for comfort, efficiency, and maximum visibility. Fingertip hydraulic controls are located at the sides of the adjustable seat. Remote control of the carrier is also available as an optional feature.

Available either on rubber-tire carrier or crawler, the new Gradall has an especially designed Duplex 8x4 carrier with torque-converter drive and power steering as standard equipment. The crawler understructure is fully hydraulic, four hydraulic motors supplying the power for the two tracks. The tracks are 30 inches wide and 13 feet 7 7/16 inches long. The over-all width of the crawler under-

Another Winning Combination

CLARKLIFT* 40 and CONTINENTAL RED SEAL POWER

CONTINENTAL F4162 Engine

DISPLACEMENT 162 cu. in.

HORSEPOWER 49 at governed speed of 2,200 rpm.

MAXIMUM TORQUE 123 lb. ft. Available also for use on LP fuel

*TM REG.

For years, the experience of users has underscored one fact: for day-after-day dependability, this Clark-Continental work team is mighty hard to beat. In the new Clarklift 40, as in numerous other Clark models that are gaining ever-wider acceptance in the industrial and construction fields, Clark Equipment and Continental Motors have joined hands, with outstanding results. Their engineering experience and manufacturing skill are producing specialized machines that speed the work and cut the cost on a steadily-lengthening list of jobs. And while they vary widely in size, in power, in purpose, these units have in common an amply-proved capacity to operate day in, day out, with a minimum of costly down-time.

ANY EQUIPMENT IS BETTER WITH CONTINENTAL RED SEAL POWER

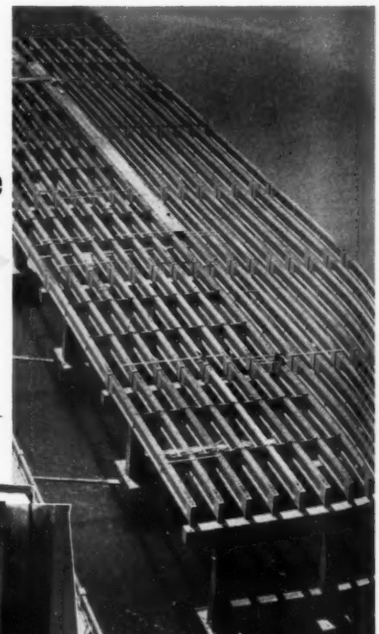
Continental Motors Corporation

MUSKEGON • MICHIGAN

8 EAST 45TH ST., NEW YORK 17, NEW YORK • 3817 S. SANTA FE AVE., LOS ANGELES 58, CALIF.
6218 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 1252 OAKLEIGH DR., EAST POINT (ATLANTA) GA.

For more facts, use Request Card at page 18 and circle No. 300

mass-produce your precast bridge sections ... use WATCO STEEL FORMS



AASHO-PCI BRIDGE GIRDER FORM

SQUARE PILING FORM

On big volume bridge jobs you will be time and money ahead when you cast piling and girders in WATCO steel forms.

These forms are designed for mass production of all State Road Department and AASHO-PCI bridge girders. Available in 10 ft. sections which provide ease ig handling in lengths up to 50 ft. — at any one time. Removable side forms enable you to turn over beds quicker and set up additional lines.

WATCO forms are a product of the pioneer organization in fabrication of steel forms for precast prestressed concrete. They offer vital advantages found in no other competitive equipment. One of our representatives will be glad to supply complete details. Write today for his assistance.

Manufacturers of WATCO Steel Forms

PLANT CITY STEEL CORP. • P. O. BOX 1308 • PLANT CITY, FLORIDA

CONVERTO MANUFACTURING COMPANY • CAMBRIDGE CITY, INDIANA

For more facts, use Request Card at page 18 and circle No. 301

structure is 10 feet 6 inches.

The quick-change bucket arrangement found on the smaller Gradall has been retained on this new model. Attachments available include a 48-inch-wide excavating bucket, a 10-foot-wide clear-span bucket for ditch cleaning, a pavement-removal bucket, a ripper tooth, and push-type buckets of 1¼ and 2½-yard capacity. Formed buckets up to 25 feet in width are available on special order.

For further information write to the Gradall Division, Warner & Swasey Co., Dept. C&E, 5701 Carnegie Ave., Cleveland 3, Ohio, or use the Request Card that is bound in at page 18. Circle No. 110.

Asphalt finisher paves on tracks, runs on rubber

An asphalt finisher which paves on crawlers, then travels from job to job at 30 mph on rubber tires, is announced by the Barber-Greene Co.

Designated Model 873, the machine offers laying widths from 6 to 12 feet, in 3-inch increments. It is equipped with power-operated hydraulically retractable pneumatic tires and a towing tongue which may be attached in a matter of seconds to the hitch of any light truck.

According to the company, the Model 873 constantly compensates for base irregularities, and its compaction, simultaneous with strike-off, places additional compacted material into low spots to maintain level under traffic and rolling. Mat thickness changes are gradual.

Other features include a single joystick-type directional control, and a deflecting device to provide simple and quickly reacting control of the flow of material through the machine.

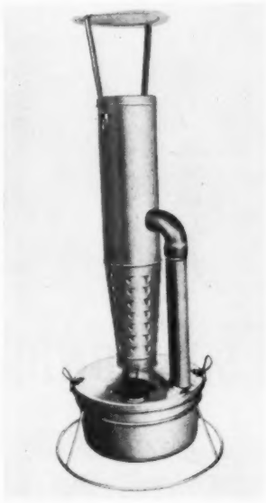
For further information write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 129.

The hopper sides on Barber-Greene's Model 873 asphalt finisher are raised and tilted hydraulically. Flat hopper sides insure maximum capacity when receiving mix from trucks; tilted sides provide discharge of all material without hand cleanup. This feature also reduces the unit's transport width to 8 feet.

Oil-burning salamander eliminates soot, smoke

An oil-burning salamander, operating on a return-gas principle said to end smoke and eliminate soot, is announced by the Scheu Products Co. of Upland, Calif.

Designated Hy-Lo, it produces 70,000 to 140,000 Btu's per hour, using



½ to 1 gallon of fuel oil, according to the manufacturer. The unit stands over 5 feet high, and is said to throw both radiant and convected heat sidewards in all directions.

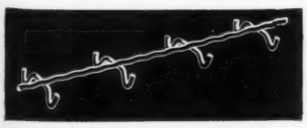
The Hy-Lo can be carried easily from place to place, requires no skilled attendant, and is operational 24 hours per day.

For further information write to the Scheu Products Co., Dept. C&E, P. O. Box 262, Upland, Calif., or use the Request Card at page 18. Circle No. 29.

TIME SAVED TWICE! with SYLGAB

Continuous BAR BOLSTER SUPPORTS

1. The right material at the right time. No delays due to late delivery or mixed-up shipment.
2. Designed for speedy, easy installations. Allows fast pouring due to high rigidity.



A RUGGED SUPPORT FOR SLAB REINFORCEMENT

Made in 5' lengths of hard steel wire supporting bar with wire legs spaced either standard 5" distance or directly under each slab rod (4" min.)

•

Member Concrete Reinforcing Steel Institute

•

Manufacturers of Steel and Wire Accessories for Concrete and Fireproof Construction.

SYLGAB STEEL & WIRE CORP.
79-05 Cooper Ave., B'klyn 27, N. Y.

BEAM CLIPS • SPECIAL COLUMN CLIPS
EXPANSIBLE CLIPS
STRAIGHT AND COIL WIRE
HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES

Request Catalog—Phone or Wire Collect

For more facts, circle No. 302

This tough, rugged chain tape is justifiably called a "drag tape". It withstands the rigors of daily field use in all kinds of terrain. It outlasts most other tapes because . . .

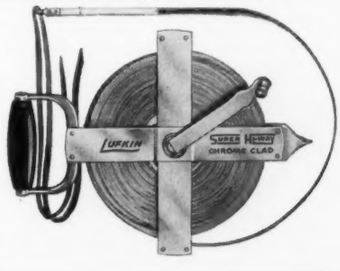
It Has Raised Markings and protective borders that are a part of the actual tape and will last as long as the tape itself.

The Line Is 5/16" Wide of special analysis steel that resists kinking and breaking.

It Is Chrome Clad®, an all-metal finish. The line is built up with a series of electroplatings, with a final hard satin-chrome finish that is resistant to abrasion, rust and corrosion.

It Is Easier To Read. The raised markings stand out sharply against the jet-black background; cannot be obliterated by mud and dirt.

The SUPER HI-WAY Drag Tape is furnished in 100, 200 and 300 foot lengths, either with or without reels. Two leather end thongs and a chainman's conversion rule are supplied with each tape. Choice of three styles of end markings.



THE LUFKIN RULE COMPANY
TAPES • RULES • PRECISION TOOLS
SAGINAW, MICH. • MIDDLETOWN, N.Y. • BARRIE, ONT.

For more facts, use Request Card at page 18 and circle No. 303

Ten Stow Model BUSP vibrators, mounted in a semi-raised position on a concrete spreader, internally vibrate runway concrete. The various combinations of components can be obtained to meet any specifications on slabs from 12½ to 25 feet wide.

Gang vibrator assembly attaches to spreader

The Stow Mfg. Co. announces a gang vibrator assembly complete with generator, hydraulic-lift mounting frame, brackets, and Model BUSP 2-hp electric vibrators. These rigs are designed to attach to concrete spreaders, and are said to be ideal for jobs where the specifications call for full-depth internal vibration.

Various combinations of vibrators, generators, and mounting frames can be obtained to meet any specifications on slabs from 12½ to 25 feet wide. With the hydraulic lifting bar, the vibrators can be lifted easily out of the concrete when not in use, or the vibrator heads set at any height desired.

The Stow BUSP vibrator has a 3×15-inch-long vibrator head with duplex ball bearings in each end. A short 7/16-inch-size flexible shaft connects the vibrator head to a 2-hp universal motor which drives the head at 9,000 vibrations per minute. Smaller heads can be obtained if desired.

For vibrating next to the forms only, a hand-lever arrangement is available for raising and lowering the two vibrators, one on either side of the spreader.

For further information write to the Stow Mfg. Co., Dept. C&E, 40 Shear St., Binghamton, N. Y., or use the Request Card at page 18. Circle No. 63.

Newly designed truck cabs carry six passengers

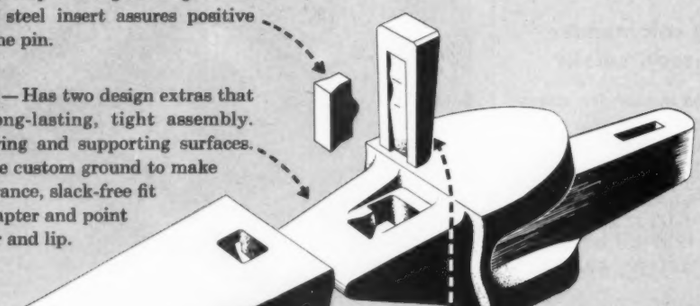
Six-passenger Travel-Crew truck cabs for medium and heavy-duty International trucks are available from the International Harvester Co.

The new cabs are designed for factory installation on Models A and AC-160 (16,000 to 19,000 pounds GVW), A and AC-180 (19,000 to 22,000 pounds GVW), and 4-wheel-drive models in these two series. It is also available for ACF-180 6-wheel models in both rear-axle and all-wheel-drive versions (30,000 to 33,000 pounds GVW).

According to the manufacturer, the Travel-Crew cab is roomy, yet increases bumper-to-back-of-cab dimensions by only 36 inches.

Another important feature is the special provision for 60 and 84-inch cab-to-axle dimensions on selected models to permit standard body in-

NEW AMSCO® 2 PART TOOTH



PIN LOCK—Special high-strength rubber with a steel insert assures positive locking of the pin.

ADAPTER—Has two design extras that assure a long-lasting, tight assembly. Larger bearing and supporting surfaces. Adapters are custom ground to make a close-tolerance, slack-free fit between adapter and point and adapter and lip.

REVERSIBLE TIP—Enables you to get longer digging life while maintaining sharpness.

TAPERED PIN—This tapered pin does not depend on the rubber lock to hold the tip on. Notice the "shoulders" indicated on the front of the adapter . . . and the mating shoulders on the pin. These shoulders lock the tip in place with metal-to-metal contact. The rubber lock, in turn, locks the pin in place.

3 big features for fewer shovel shutdowns

1 You get up to four times extra wear over other 2-part teeth. We cast these new teeth of a tougher, new and special heat-treated alloy that slashes your replacement and maintenance costs.

2 These reversible teeth stay sharp, to penetrate cleanly and easily without straining your shovel. Reversing point is easy. This reversible feature is particularly important on corner teeth. It maintains digging efficiency throughout tooth life.

3 Positive locking device—Amsco's unique pin-locking design secures tip to adapter in tight, positive, metal-to-metal contact.

Order the Amsco 2-part Simplex from your local power shovel dealer.

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DEL., OAKLAND, CAL., ST. LOUIS, JOLIETTE, QUEBEC

For more facts, use Request Card at page 18 and circle No. 304

FOUNDATION CONSTRUCTION

CAISSONS

DRILLED AND UNDERREAMED

PIERS

SPECIAL DRILLING PROBLEMS

Offices in Atlanta, Ga., Pittsburgh, Pa., Washington, D.C., Cleveland, Ohio

Wire or phone for a quotation on your next foundation job — ANYWHERE IN THE WORLD

McKINNEY DRILLING COMPANY

NACOGDOCHES, TEXAS

Ph.: LOgan 4-8373 • P. O. Box 190

For more facts, circle No. 305

In some instances, International Harvester points out, one truck with a Travel-Crew cab can replace two or even more conventional trucks. The cab increases bumper-to-back-of-cab dimensions by only 36 inches.

stallations without requiring frame modification in the field.

For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 56.

Combined dc arc welder, ac power unit offered

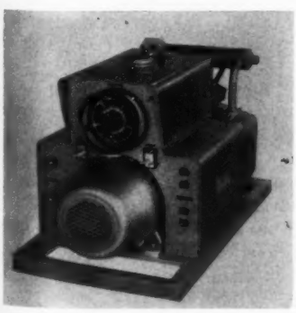
PowrWeld, a combination dc arc welder of 200-amp capacity and ac power unit of 5-kw capacity, is announced by Hobart Bros. Co. According to the manufacturer, ac power can be drawn from the unit for lights and tools at the same time it is being used for dc welding.

The welding generator has a range of 30 to 225 amp for intermittent use. It will handle all types of electrodes (straight or reverse polarity) in all welding positions. Welding current is easily adjusted for the five main ranges, and a rheostat provides 100 steps of fine adjustment in each.

The same generator provides the full 5-kw 110/220-volt single-phase 60-cycle ac power.

An Onan Model CCK air-cooled 4-cycle 2-cylinder engine is directly coupled to the generator to form a compact unit 38 inches long, 21¼ inches wide, and 25¾ inches high. Weight of the unit is 620 pounds.

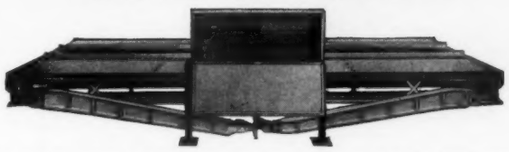
For further information write to the Hobart Bros. Co., Dept. C&E, Hobart Square, Troy, Ohio, or use the Request Card at page 18. Circle No. 14.



To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

WINSLOW—PORTABLE-TRUCK SCALE

THE CONTRACTORS' SPECIAL SCALE



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacity: 15-18-20-30, 40 and 50 tons.

Write us for name of your nearest distributor

WINSLOW SCALE COMPANY P.O. Box 1198 Terre Haute, Indiana

For more facts, use Request Card at page 18 and circle No. 306

OLIVER

OC-4 CRAWLER—DIESEL OR GASOLINE

OC-46 Loader is a factory-built, *integral* ⅜-yd. tractor-loader. Rigid subframe. Greatest roll-back (32°) with tremendous break-out force. Has ideal speed range with slow 1½ m.p.h. to fast 5¼ m.p.h. for loader operations. Exceptional balance with 46" track gauge.

Economize those smaller jobs ...dieselize with the OC-4!

You don't have to stand for high costs on those many "medium" jobs any more!

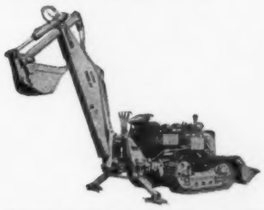
First, the Oliver OC-4 is the only crawler in its class offering diesel power. That means fuel standardization—you can save with diesel even in this popular tractor size!

Second, for all its compact, job-accessible size, the OC-4 performs like larger rigs. By nationally recognized tests, the OC-4 diesel out-powered, out-pulled and out-stepped all other crawlers its size!

Third, the OC-4 is the lowest priced diesel crawler you can buy—for substantial initial savings in addition to important year-after-year operating economies.

Alert users are profiting from the OC-4 by letting this capable crawler do all those jobs where it's uneconomic to tie up larger rigs and wasteful to use less efficient equipment. The OC-4 works with a wide range of front and rear attachments.

Talk to your Oliver distributor about the remarkable OC-4 now—gasoline or diesel models.



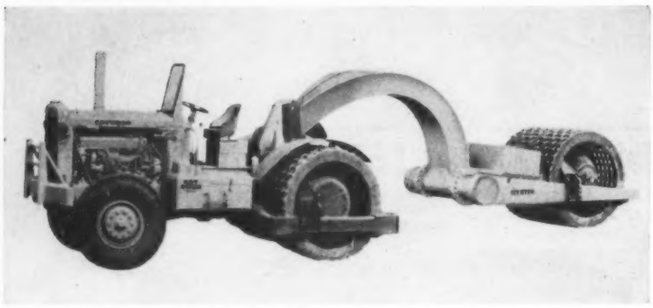
Doubly versatile the Oliver loader with Hydro-Jet Trencher. Deep 12'5" digging and rapid work cycle speed all back-hoe work. Trencher attaches and detaches in less than a minute! Also work the OC-4 with these attachments: dozer, angledozer, scarifier, winch, side boom, scraper, etc.

OLIVER **THE OLIVER CORPORATION**

Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio

a complete line of industrial wheel and crawler tractors and matched allied equipment

For more facts, use Request Card at page 18 and circle No. 307



The DW20A travels at speeds from 5.5 to 15.3 mph and covers a 10-foot 2-inch width per pass. Its turning radius is 17 feet.

New compaction machine makes better than 15 mph

The Hyster Co. announces the Model DW20A grid compacter, a self-propelled machine designed to match compaction yardage with the high spreading capacity of earthmoving machines.

The DW20A consists of a Caterpillar DW20 tractor prime mover (Series C, D, E, or F) with two grid wheels mounted on driving axles, and 2-wheel grid towed unit.

Steel-slab ballast for the prime mover and towed unit, plus sand in wheel cones, gives wheel reactions of 30,800 pounds for prime mover rear wheels and 32,300 pounds for towed unit wheels.

The machine travels at speeds from 5.5 to 15.3 mph. Width covered per pass is 10 feet 2 inches; turning radius is 17 feet.

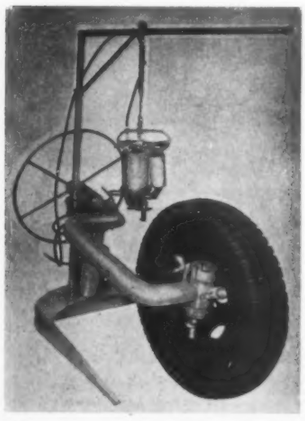
For further information write to the Hyster Co., Dept. C&E, 2902 N. E. Clackamas St., Portland 8, Ore., or use the Request Card at page 18. Circle No. 66.

Device mounts, removes tires quickly and easily

For fast fingertip control in handling truck tires during mounting or removing operations, the Branick Mfg. Co. offers a unit called the Big Hand.

This unit grips the wheel or rim of the tire, lifts it off the floor, and turns it to any desired angle. Power is supplied by air.

For further information write to the Branick Mfg. Co., Dept. C&E, 2600 Third Ave., Fargo, N. Dak., or use the Request Card at page 18. Circle No. 16.



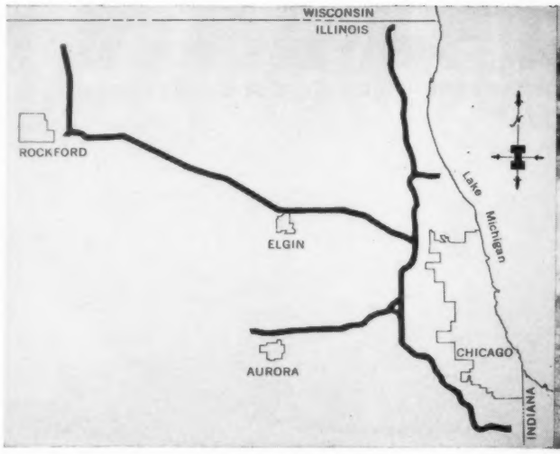
Lightweight tractor line includes "axle-back" units

The addition of "axle-back" models to its all-lightweight-design highway trucks and tractors is announced by the Autocar Division of The White Motor Co.

According to the manufacturer, the new lightweight models save up to 25 per cent in tractor weight.

Available is a full range of tractor and truck 4 and 6-wheel models, both "axle-forward" type for the bridge formula states and "axle-back" models for the non-formula states. They are offered in diesel power ranging from 180 to 262 horsepower, and with a variety of transmissions.

For further information write to the Autocar Division, The White Motor Co., Dept. C&E, Exton, Pa., or use the card at page 18. Circle No. 130.



Map showing various sections of Northern Illinois Tollway under construction and linking Indiana, Illinois and Wisconsin.

Completed stretch of Northern Illinois Tollway near

Illinois Tollway loops the loop

with the help of Tiger Brand Wire Rope, of course!

LOOPING a four- and six-lane highway around the city of Chicago is a tremendous engineering feat . . . but the Illinois Tollway goes even farther. It includes about 200 miles of interconnected highways that will link the Indiana Toll Road with a by-pass of Chicago, and give quick access to Milwaukee and Madison, Wisconsin, and Aurora, Illinois. The total estimated cost is around 441 million dollars.

To get the job done quickly, 42 contracts were let for 50 construction sections. Contractors have moved approximately 73 million cubic yards of earth with shovels, draglines, scrapers and other equipment.

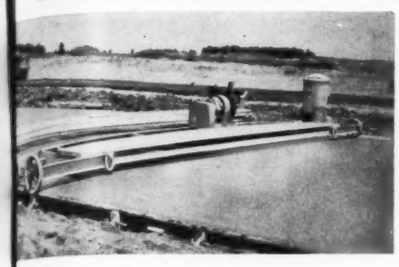
For all of these tough lifting jobs, wire rope supplies the mechanical "muscles." And USS Tiger Brand is widely used. This rugged wire rope is built to the beating it gets on rush construction work. tractors have found they get longer service lif less down time when they rig up with Tiger B This means lower wire rope costs.

What's more, you can get Tiger Brand Rop signed to fit any piece of construction equipme and there's a Tiger Brand field service engineer to help you choose the best rope for the job. not take advantage of this free service for your e ment? Call our local wire rope distributor, or w American Steel & Wire, 614 Superior Ave., N Cleveland 13, Ohio.

USS, Tiger Brand and Super-Tens are registered trad

American Steel & Wire Division of USS United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors · Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors · United States Steel Export Company, Distributors Abroad



An all-round unit for finishing and belting, for use as a crossover, and for carrying tools, water, and equipment, this power traction bridge moves along at 2½ fpm.

Self-propelled bridge has wide range of uses

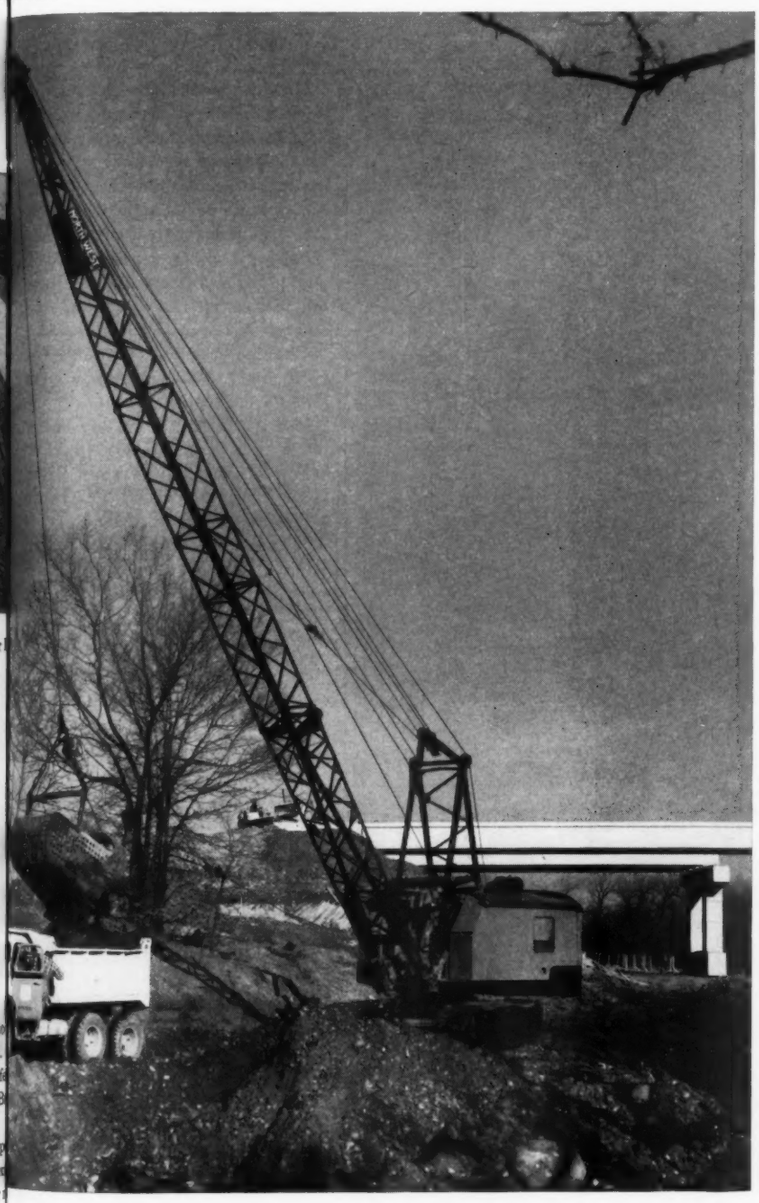
Designed to keep pace with fast-moving paving trains, the new self-propelled power traction bridge offered by The Cleveland Formgrader Co. travels at a speed of 2½ fpm.

The bridge is an all-round unit for finishing and belting, for use as a crossover, and for carrying tools, water, and equipment.

Powered by a 2¾-hp 4-cycle engine, the bridge has a simple reversing transmission which is operated by a single control. One of the bridge's features is its ability to operate without attention, once it has been put in gear.

The power traction unit is available on single finishing bridges, double float bridges, and burlap bridges.

For further information write to The Cleveland Formgrader Co., Dept. C&E, R. D. 1, Mills Road, Avon, Ohio, or use the Request Card at page 18. Circle No. 22.



Dragline equipped throughout with Tiger Brand Wire Rope, to keep it on the job longer with fewer rope changes. Note the prestressed concrete bridge, which is one of many prestressed with American Super-Tens Stress-Relieved Strand.

r notable jobs using USS Tiger Brand Wire Rope

rt Pitt Bridge. Built with 8960 feet of USS Tiger Brand Rope suspenders, 3¼ inches in diameter. One of the few -deck, tied-arch bridges in existence. Soon you can cross urgh in 30 minutes.

St. Lawrence Seaway. One of the biggest construction jobs of all time. Huge quantities of Tiger Brand Wire Rope were used throughout for cranes, shovels, draglines and other equipment.

Combination ac-dc welder features compact design

A new combination ac-dc transformer-rectifier welder is announced by the Miller Electric Mfg. Co., Inc.

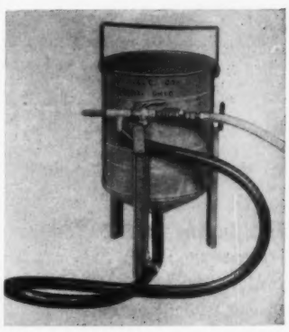
Called Model 180 Twin, the compact unit delivers two ac ranges (20 to 115, and 60 to 180 amps), and one dc range of 40 to 150 amps.

For further information write to the Miller Electric Mfg. Co., Inc., Dept. C&E, 718 S. Bounds St., Appleton, Wis., or use the Request Card at page 18. Circle No. 113.

New sandblaster offered, handy for spot blasting

The Sandy Jet spot blaster is announced by the A. L. C. Co.

According to the manufacturer, the unit quickly and easily removes rust, paint, carbon, dirt, and weld scale,



right down to bare metal. The company also states that, with just a squeeze of the trigger, the operator can easily clean large areas or spot blast in hard-to-reach places.

The blaster operates on a compressor furnishing 100 to 185 psi. No separate blast room is required, and the tank holds 12 quarts of abrasives such as silica sand, metal shot, etc.

For further information write to the A. L. C. Co., Dept. C&E, 646 Oak St., Medina, Ohio, or use the Request Card at page 18. Circle No. 37.

←For more facts, circle No. 308

Designed to carry 50 to 60 cubic yards, the 62-foot-long LeTourneau scraper can travel at a speed of 20 mph fully loaded. Empty, the machine weighs approximately 130,000 pounds.

Giant new scraper has 70-ton capacity

A scraper rated at 70 tons (50 to 60 cubic yards) is announced by R. G. LeTourneau, Inc.

The machine features an electric wheel system, which includes a powerful dc electric motor geared directly to the inner rim of every wheel. It also includes ac motors to furnish power for steering and for manipulating the loading and unloading mechanisms. According to the manufacturer, there are no wearing parts in the brake system, and horsepower is automatically shifted away from any wheel that begins to slip.

For more facts on these products, circle the indicated number on the Request Card at page 18.

All electricity is generated by a Cummins 600-hp diesel engine, which is coupled to LeTourneau ac and dc generators under the hood.

The new machine is about 62 feet long, 14 feet wide, and has an empty weight of 130,000 pounds. It travels on wide-base tubeless tires 7.3 feet high at a speed of 20 miles per hour fully loaded.

For further information write to R. G. LeTourneau, Inc., Dept. C&E, 2399 S. MacArthur, Longview, Texas, or use the Request Card at page 18. Circle No. 69.

YES! YOU CAN BUY DIRECT
SEND US YOUR ORDERS FOR
NEW ROTARY SWEEPER BROOM CORES

WE MANUFACTURE ALL SIZES

SUGGESTION—To faraway users. Order cores only without fibres but ready to fill.

• Detroit Harvester • Fordson • Grace (3 types) • Hough • Huber • Lull • Littleford • Little Giant • Melii-Blumberg (M-B) • Rosco • Spearswell • Tampo And many others

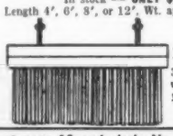
$69.50 UP.

Also Cores Made to Your Specifications

KENNEDY'S
VAN BRUSH MFG. CO. INC.
SINCE 1928
2748 McGee Trfy. Kansas City, Mo.

Road Builders — it's sensational!
BIG PECKERWOOD BIG
C-O-N-T-I-N-U-O-U-S
Drag Broom Levelers with Spring Steel Wires or Bass Fibres six inches wide and lengths to 12 feet, and also now three inches wide. No frame required.

Also furnished filled with Palmyra-Hickory or Bass Fibres or even Spring Steel Wires.
WE SHIP WORLDWIDE—IMMEDIATELY
In stock — ONLY $3.50 FOOT
Length 4', 6', 8', or 12'. Wt. approx. 5½ lb. (foot)



THE LITTLE PECKERWOOD
3" wide, 15" long, with two bolts, fits your present frame.
ONLY $2.50 EACH

For more facts, use Request Card at page 18 and circle No. 309

"Nothing cuts driver training costs like Torqmatic Drive"

Talk to any hard-boiled construction boss with TORQMATIC DRIVE experience and he'll tell you this modern drive for modern equipment is the real answer to driver-training problems.

The reason is clear—TORQMATIC DRIVES use oil to transmit power. And the oil takes all the beating a new hand usually gives a piece of equipment when he makes a shifting mistake.

So it's practically impossible for a greenhorn to burn out clutches, strip gears, snap drive lines, break axles or lug engines—the kind of equipment damage that can cost as much as $2,000 for every driver trained.

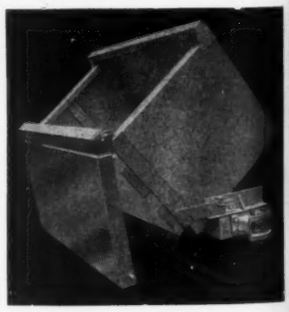
When you add the savings you'll make on TORQMATIC driver training to the extra profits you'll make from greater availability, faster round trips, bigger payloads, better tire life and far lower maintenance costs, you'll quickly see there's nothing like TORQMATIC DRIVE to make contracts more profitable.

You can get TORQMATIC DRIVES in construction equipment to handle every job from first cut to final paving. Find out what's in it for you by looking into TORQMATIC DRIVE before you buy. See your equipment dealer or write:

Allison Division of General Motors, Indianapolis 6, Indiana

Allison TORQMATIC
TORQMATIC® DRIVES
THE MODERN DRIVE FOR MODERN EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 310



MAYO Tunnel Cars

. . . feature practical designs and rugged construction. All cars can be equipped with Mayo's safe, automatic couplers.

• Side Dump Car (shown) has 2½ cu. yd. capacity. 24" gage.
• Rocker Dump Car Ideal for sticky muck or wet concrete. 1 cu. yd. capacity. 24" gage.
• Tunnel Car. Box body is removable and may be hoisted to surface to be dumped into truck. ½ to 2 cu. yd. capacity. 18" or 24" gage.

FREE Bulletin No. 18b shows car details; No. 22 illustrates Automatic Coupler.

MAYO
TUNNEL AND MINE EQUIPMENT
LANCASTER, PENNA.

For more facts, circle No. 311

Designed as companion tools for Oliver wheel tractors, the Ottawa front-end loader and Model LX backhoe operate from a single hydraulic system. The backhoe can dig and load at any angle up to 95 degrees right or left from the center line of the tractor.

New backhoes, loaders made for wheel tractors

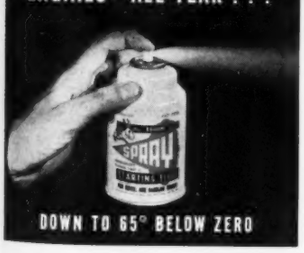
The new Ottawa Model LX backhoe, which digs to a depth of 12½ feet in any position of a continuous 190-degree arc of swing, and the Ottawa front-end loader, are available for the Oliver line of industrial wheel tractors. Adaptations are offered for Oliver Models 550, 770, 880, and Super 55, 77, and 88.

Designed as companion tools, the units operate from one hydraulic system, though either attachment can be mounted and operated without the other. A quick on-and-off feature makes it possible to remove the backhoe in five minutes.

An ejector bucket automatically forces out all wet, sticky material from the bucket during the dumping cycle. Another important feature is Ottawa's One-Trol system, which makes it possible to operate the loader with only one lever, and the backhoe with only two levers.

For further information write to the Ottawa Steel Division, Young Spring & Wire Corp., Dept. C&E, 435 S. Main, Ottawa, Kans., or use the card at page 18. Circle No. 87.

QUICK STARTS FOR COLD ENGINES* ALL YEAR . . .



DOWN TO 65° BELOW ZERO

Starting a cold engine without SPRAY STARTING FLUID is costly. Constant wear of the starting system . . . wasted man hours . . . equipment down-time . . . repeated engine strain, can be prevented with a pressurized can of SPRAY STARTING FLUID. It's so easy to use! Apply SPRAY STARTING FLUID into the air cleaner or intake air stream while cranking the engine. Continue spraying until the engine runs smoothly. Use SPRAY STARTING FLUID regularly for quick, easy and economical starting of diesel and gasoline engines. Start every work day with SPRAY!

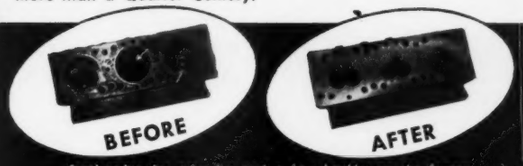
*Until the engine reaches normal operating temperature it is a cold engine.

SPRAY PRODUCTS CORPORATION
P. O. Box 844 • Camden 1, New Jersey

For more facts, circle No. 312

DON'T THROW AWAY CRACKED DIESEL CYLINDER HEADS

You can save 50% of replacement cost with Factory Rebuilt Swick-Guth Heads. Swick-Guth restores cracked or worn heads, blocks, transmission cases to a Guaranteed good as new condition by the Controlled Heat Process . . . successfully used for more than a Quarter Century.



Send today for price list and a free booklet on the famous Swick-Guth Process, and the name of the dealer nearest you.

SWICK-GUTH CO.
McPHERSON, KANSAS • FORMERLY GUTH CO.

"SPECIALISTS IN WELDING DIESEL CASTINGS"

For more facts, use Request Card at page 18 and circle No. 313

27 SELF-PRIMERS

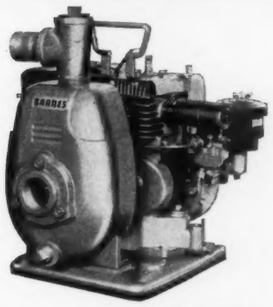
...and Barnes pumps prime without fail!

27 versatile models meet most construction needs—designed for any power source—deliver 2500 to 90,000 gph—available from one source of supply nearby!

You get the ultimate in reliable self-priming when you standardize on Barnes *Blue Ribbon Quality* pumps!

Barnes exclusive self-priming principle for centrifugal pumps incorporates a *free passage vent* adjacent to the periphery of the impeller. It defies clogging. *It primes without fail*—even with as little as ⅓ normal water level in the pump!

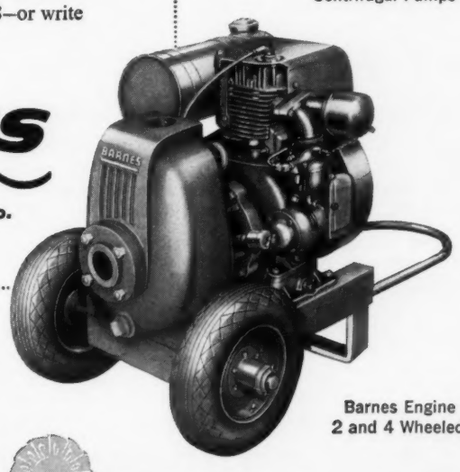
In your business, the chief test of any pump is in the years of continuous, low-cost operation it delivers. That is where Barnes self-primers stand out because every model is proved in our Blue Ribbon Quality Test Booth *before* entering the field! Ask your Barnes distributor for handy Construction Pump Selector #238—or write to us. Address Dept. B-118.



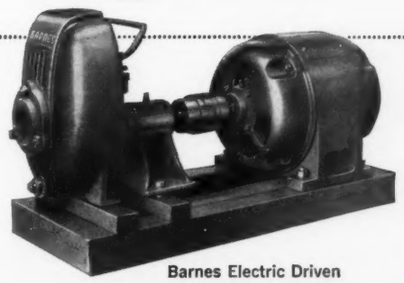
Barnes Engine Driven "Lightweight" Pumps

Barnes Universal Drive Centrifugal Pumps

BARNES
Barnes Manufacturing Co.
Mansfield, Ohio



Barnes Engine Driven 2 and 4 Wheeled Pumps



Barnes Electric Driven Centrifugal Pumps

Specify Barnes Blue Ribbon Quality . . . it pays off!

5860

For more facts, use Request Card at page 18 and circle No. 314

"BERG" CONCRETE SURFACERS

for: bridges, highways, airport runways, dams, culvert, floors, walls.

Model H-8 and H-10 (above). Gasoline powered unit especially designed for surfacing concrete highways, runways, streets, floors. Includes exclusive power take-off for attaching "BERG" flexible shaft surfacing equipment. Model A (right) is lightweight, electric powered unit that suspends from operator's shoulder. Equipped with interchangeable heads and attachments for surfacing bridges, buildings, dams, culvert, walls or similar surfaces. Wire or write for details.

CONCRETE SURFACING MACHINERY CO.

4665 Spring Grove Avenue **Cincinnati 32, Ohio**

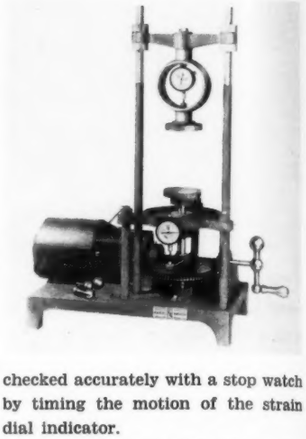
For more facts, use Request Card at page 18 and circle No. 315

Product Parade

Testing machine shows soil shear strength

The shear strength of cohesive soils can be quickly determined with the new K-W unconfined compression soil-testing machine announced by the Tinius Olsen Testing Machine Co.

Axial loading is accomplished by means of an infinitely variable speed drive which moves the lower sample head vertically at any constant rate from 0 to 0.15 inch per minute. The strain rate is selected by moving a short lever on the motor, and can be



checked accurately with a stop watch by timing the motion of the strain dial indicator.

Axial load is read directly on the load ring attached to the upper sample head, while strain is measured by a dial indicator attached to the drive rod. The frame is designed to withstand a maximum load of 2,000 pounds.

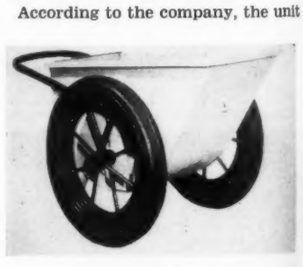
Weighing under 50 pounds and occupying less than 1½ square feet of table space, the entire unit can be transported easily and set up at will.

For further information write to the Tinius Olsen Testing Machine Co., Dept. C&E, 733 Easton Road, Willow Grove, Pa., or use the Request Card at page 18. Circle No. 73.

Concrete buggy designed for 30-inch doorframes

The Muller Machinery Co., Inc., announces a new narrow-type addition to its concrete-buggy line.

According to the company, the unit



can handle a capacity of 6 cubic feet and is constructed to go through a standard 30-inch doorframe.

Either pencil bearings or cage-type roller bearings are available, and are said to make the buggy easier to operate, as well as reduce noise under heavy loads.

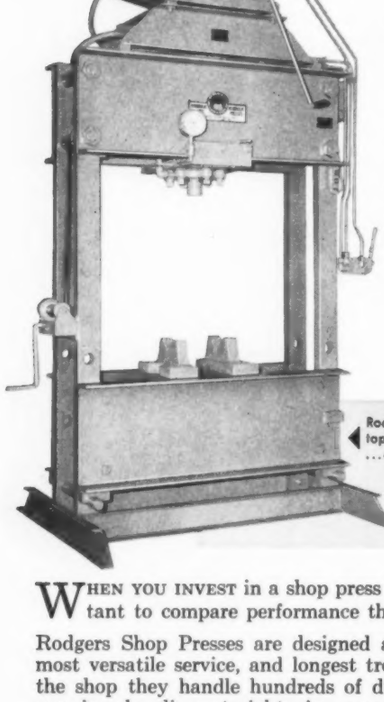
For further information write to the Muller Machinery Co., Inc., Dept. C&E, P. O. Box 248, Metuchen, N. J., or use the Request Card at page 18. Circle No. 23.

Machine hairpins pipes in single operation

A portable hydraulic bending machine, which in a single operation bends up to 3-inch-thick thin-wall tubing in angles up to 180 degrees, is available from Engineering Associates.

Any type of bend can be made on

A Rodgers Shop Press is BEST for YOU!

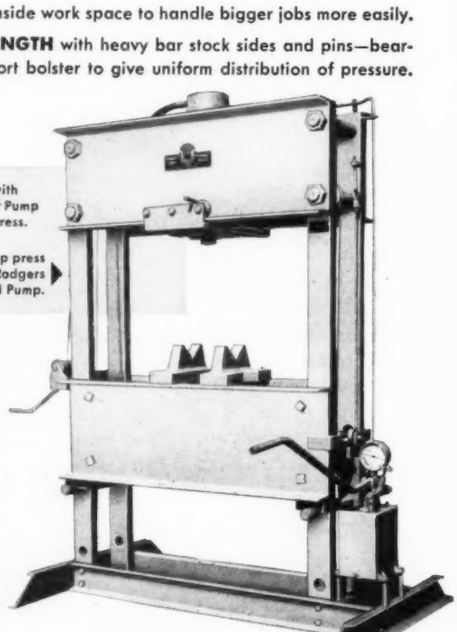


HERE'S WHY:

- **LONGEST RAM TRAVEL** with maximum hydraulic power throughout entire stroke.
- **REMOVABLE CYLINDER** for independent hydraulic power away from the press.
- **CYLINDER TRAVEL** full width of press, either way.
- **OPEN ENDS** allow long pieces to extend through sides of press.
- **EXTRA WIDE** inside work space to handle bigger jobs more easily.
- **GREATER STRENGTH** with heavy bar stock sides and pins—bearing blocks support bolster to give uniform distribution of pressure.

Rodgers 100 ton shop press with top mounted Greenlee Power Pump ...cylinder travels width of press.

Rodgers 100 ton shop press with Rodgers 2 speed Hand Pump.



WHEN YOU INVEST in a shop press it is more important to compare performance than initial cost!

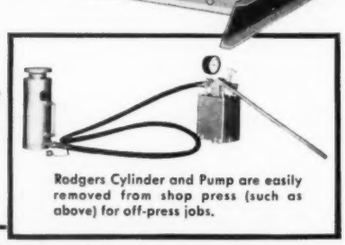
Rodgers Shop Presses are designed and built for the most versatile service, and longest trouble-free life. In the shop they handle hundreds of diversified jobs ... pressing, bending, straightening, assembling. For field work the Rodgers cylinder and pump are easily removed from the press, making an ideal portable power unit for jacking, lifting, heavy shaft removal and similar work.

Rodgers produces the most complete line of shop presses available—capacities from 60 to 400 tons—in varied standard models with power pumps, top mounted or placed at the side—or hand pumps with 2 or 3 speeds.

When you compare shop press performance and cost you will find a Rodgers is best for you, too. Ask your Rodgers Representative for complete details—or write us.

SEND FOR NEW CATALOG ...

It gives useful information and complete specifications.



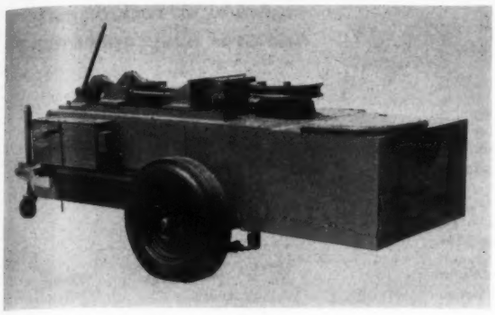
Rodgers Cylinder and Pump are easily removed from shop press (such as above) for off-press jobs.

RODGERS HYDRAULIC, Inc.

Pioneers in High Pressure Hydraulics Since 1932

7415 WALKER STREET • MINNEAPOLIS 26, MINNESOTA

For more facts, use Request Card at page 18 and circle No. 316



Maximum distortion of cross section on the Model 3 bender is less than 2 per cent. Outer surface of the pipe or bar is left free from markings.

the Model 3 bender, including offset and reverse, and accurate repeat bends are made possible by setting the easily adjusted limit stops.

The unit uses a 3-hp 3-phase 220/240-volt motor for electrical power.

Specifications include a 114-inch length, 54-inch width, 45-inch height, 38-inch table height, and a weight of 2,500 pounds.

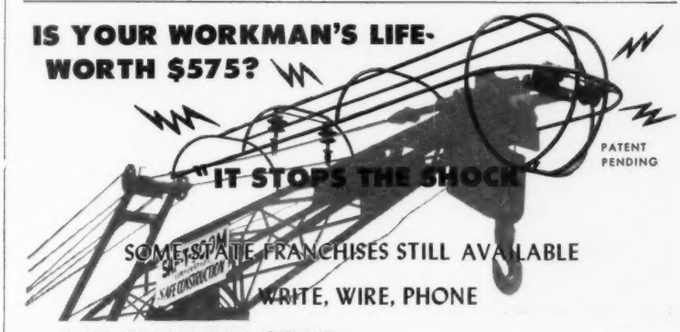
For further information write to Engineering Associates, Dept. C&E, 6547 West Blvd., Inglewood, Calif., or use the Request Card at page 18. Circle No. 47.

Alidade reading easier with new elbow eyepiece

A new elbow eyepiece has been added to the Gurley alidade. It extends in a diagonal direction from the end of the alidade telescope and can be rotated in any position and read from either side.

The new eyepiece can be furnished in place of the standard diagonal prism of the firm's standard Model 582 and Explorers Model 580.

For further information write to W. & L. E. Gurley, Alidade Department, Dept. C&E, 518 Fulton St., Troy, N. Y., or use the Request Card that is bound in at page 18. Circle No. 11.



SAF-T-BOOM CORP. 1613 MAIN, LITTLE ROCK, ARK. — FR 5-3291

For more facts, use Request Card at page 18 and circle No. 318

Are you serious about wanting to cut costs?

Hydra-Lift installed on your truck gives you a *double-duty* piece of equipment, one that lifts *and* hauls. This efficient, single piece of equipment loads material, transports it to the job, sets it off, then is available on the job for all sorts of lifting work. And, taken as a crane alone, never have you seen a more versatile piece of equipment. On Model 60HB, shown above, hydraulic power swings the boom, lifts it and telescopes it . . . enables you to work in tight spots you can't get near with ordinary equipment. Once you own a Hydra-Lift, you'll find it's never idle . . . and every minute it's working, it's saving you money! But why take our word for it. Write for literature today, then ask your Hydra-Lift distributor for an on-the-job demonstration.

AVAILABLE FOR INSTALLATION ON YOUR TRUCK, OR SPECIAL PITMAN CARRIER*

PITMAN HYDRA-LIFT

*HYDRA-LIFT Now Available with Its Own Carrier!

It's rugged and compact, gives you maximum maneuverability, plus extra stability for extra safety margin on all rated loads. And, same man who drives carrier also operates the crane from a single, swivel seat. Hydra-Lift and carrier available from factory as a package unit. Write today for full details.

PITMAN MANUFACTURING COMPANY

Please send me brochure and name of PITMAN distributor nearest me.

300 WEST 79TH TERRACE
KANSAS CITY, MISSOURI

Name _____
Company _____
Street _____
City _____ State _____

For more facts, use coupon, or Request Card at page 18 and circle No. 319

DUDGEON HYDRAULIC JACKS

SALES RENTALS

CAPACITY TO 600 TONS

FOR:
PILE TESTING
UNDER-PINNING
BRIDGES
PIPE PUSHING

DESIGNERS and MANUFACTURERS OF
Hydraulic Units For Special Applications

RICHARD DUDGEON INC. EST. 1850
789 BERGEN STREET BROOKLYN, N. Y.
• ST 9-4040 •

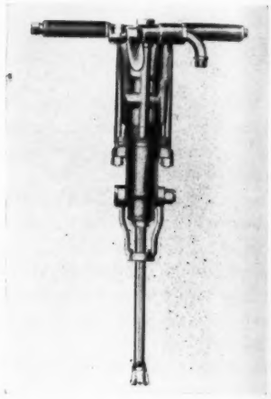
For more facts, circle No. 317

Designed for highway and street ice control, the Seaman-Andwall Model HY-4 Century spreader is hydraulically operated and is controlled by one man in the truck cab. The unit, which is mounted inside the truck tail gate, is equipped with an adjustable spinner for spreading chlorides or abrasives in widths from 26 inches to 40 feet in any direction. The manufacturer claims that the HY-4 does not spread on passing cars or on pedestrians. Intermittent spreading at intersections, bus stops, cross walks, and grades is a matter of fingertip control. For further information write to the **Seaman-Andwall Corp.,** division of American Marietta Co., Dept. C&E, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 44.

Lightweight rock drill features easy operation

A new lightweight rock drill, called the J-30A Jackhamer, is offered by Ingersoll-Rand.

In this unit, the blower valve is incorporated into the throttle valve for operating ease and convenience.



By merely turning the throttle valve to its rearmost position, the operator directs air under full line pressure through the drill rod and bit to instantly clean the hole of all cuttings.

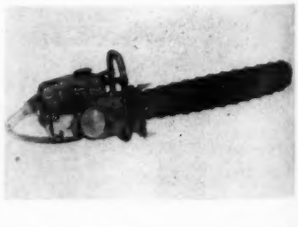
The J-30A multiple-use back-head design permits easy conversion from the standard blower-style drill to the plain dry or wet styles. Nearly all working parts of the J-30A are interchangeable with those of the earlier J-30, the manufacturer reports. In addition, a new drill-steel centralizer has all its working parts enclosed within the front head to keep out dust and dirt.

For further information write to Ingersoll-Rand, Dept. C&E, 11 Broadway, New York 4, N. Y., or use the Request Card at page 18. Circle No. 15.

Saw handles guide bars from 20 to 60 inches

A heavy-duty chain saw with a 2:2½:3 gear ratio is offered by the McCulloch Corp.

Designated Super 55A, the 22-pound unit is designed for one-man



operation. It has two-position guide-bar mounting for either center or low-stump cutting and handles guide bars from 20 to 60 inches.

Other features include an automatic rewind starter, automatic clutch, fingertip controls, and a muffler that reduces engine noise.

For further information write to the McCulloch Corp., Dept. C&E, 6101 W. Century Blvd., Los Angeles 45, Calif., or use the Request Card at page 18. Circle No. 114.

Step UP and take a FULL Swing

with the

HY-HOE Model 380

Yes, step *up*—get out of that profit-stealing half-swing class with this bonus-laden backhoe.

Put that big ⅜-yard bucket to work for you, take advantage of that 23-foot reach *in all directions,* make money with that 12-foot 8-inch clearance—here's a machine that'll load any truck that rides the highway.

And she'll eat dirt to a depth of 14 feet, in normal soil trenching 150 feet hourly, excavating 60 to 70 yards per hour. Live, positive power in all operations!

The HY-HOE Model 380 Hydraulic Backhoe is the practical and economical way to step *up* to bigger profits. The cost is only slightly more than the price of a half-swing machine, and any used truck of 2½ tons or more will carry the HY-HOE. . . .

So step *up*! Take a *full* swing! Get more work with the HY-HOE 380!

For complete information write

HYDRAULIC MACHINERY COMPANY

4685 W. Electric Ave., Milwaukee 46, Wisconsin

For more facts, circle No. 320

KIM Hotstart electric pre-heater for Diesel Engines

KIM HOTSTART pre-heaters circulate hot water through engines when they are not in use; protect them against bitter winter weather; keeps engines responsive to the touch of the starter. Lightweight; low cost; high in savings. Thousands in use.

★ *Quick easy starts*
★ *Saves warm-up time*
★ *Reduces engine wear*
★ *Cuts maintenance costs*
★ *Easy to install*

Write for literature.

KIM HOTSTART MANUFACTURING COMPANY

West 917 Broadway, Spokane 1, Washington

For more facts, circle No. 321

MOBILE OFFICE Units are low in cost . . . Built to your specifications . . . There's a unit to fill your every need.

Because MOBILE OFFICE Units are easy to move from job to job, they enable you to have office, engineering, paymaster and other facilities at every point of your operation.

These units are economical, time saving, rugged and durable. They are self-containing, and are available with air-conditioning, and can be fitted to your specifications.

MOBILE OFFICES are being used by major contractors and other major businesses throughout the United States. In every case they have proven their worth.

Remember, whatever your needs may be, a MOBILE OFFICE Unit can be built to fill your requirements.

If It's Mobile . . . We Build It!

MOBILE OFFICE, INC.
Phones; DOrchester 3-1048-9

7314 Stony Island Ave., Chicago 49, Illinois

For more facts, circle No. 322

New accounting system designed for contractors

A complete accounting system for contractors, which includes cost determination and reporting, subcontractor accounting, payroll computation, and tax accounting, is announced by the Burroughs Corp.

The work is handled on a 19-total Typing Sensimatic accounting machine.

For further information write to the Burroughs Corp., Dept. C&E, 6071 Second Blvd., Detroit 32, Mich., or use the Request Card at page 18. Circle No. 115.

This new heavy-duty tandem, the Spartan Model 100, is one of the many units announced by Chevrolet for 1959. Among reported features of the heavy-duty line are two new optional close-ratio 5-speed transmissions, improved power steering, and refinements of the 9,000-pound front axle assembly with full air brakes. A new optional power train for Series 70 and 80 models includes a larger V-8 and a heavier clutch transmission and rear axle. For further information write to the **General Motors Corp.**, Chevrolet Motor Division, Dept. C&E, General Motors Bldg., Detroit 2, Mich., or use the card at page 18. Circle No. 12.

Put trench spoil off the road —the 80W will pull it back

Keep traffic lanes clear, put your spoil off the pavement. The Cleveland 80W backfiller pulls spoil from opposite side of trench, backfills *toward* itself, works parallel to trench and to traffic.

As it backfills, the 80W simultaneously compacts fill, the right way, from the bottom up. Leaves no voids around pipe—no settling, now *or* later.

Result: a clean, safe, *completed* job.

The 80W backfills *away from* itself, too. Stays off lawns, sidewalks and completed work. Fits *all* job conditions.

The CLEVELAND TRENCHER Co.

20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO

Good Everywhere ®

For more facts, use Request Card at page 18 and circle No. 323

Rome Disk Plowing Harrows

Rome Master Disk Plowing Harrow takes a deep cut, turning material over so that excess moisture can evaporate.

BUILD *ideal* SUBBASE

for roads, airports and dams

For faster, more efficient pulverizing, aerating, blending and stabilizing of subbase materials put a Rome Disk Plowing Harrow on your job! Here's the weight and design to cut deep — pulverizing action to thoroughly mix the subbase and return material to its original position — free from ruts or windrows — the ruggedness to match the power of the largest crawlers.

Rome Disk Plowing Harrows are ruggedly-built for heavy-duty construction work. Massive main frames hold gangs level and make them penetrate uniformly. Super-strong bearings — your choice of Timken Roller or White Hard Iron — hold blades rigidly in position, provide easy rolling action. Notched blades are the finest made to withstand the punishment of rocks and stumps. Rome Disk Plowing Harrows are available in a variety of widths, in both offset and Rome Master Tandem. You have your choice of mechanical, hydraulic or cable control angling methods as well as wheel-type offsets in certain sizes.

Get all the facts at your Rome-Caterpillar Dealers.

ROME PLOW COMPANY, Cedartown, Georgia

YOUR **ROME** DEALER IS YOUR **CATERPILLAR** DEALER

For more facts, use Request Card at page 18 and circle No. 324

Four new trenchers offer innovations

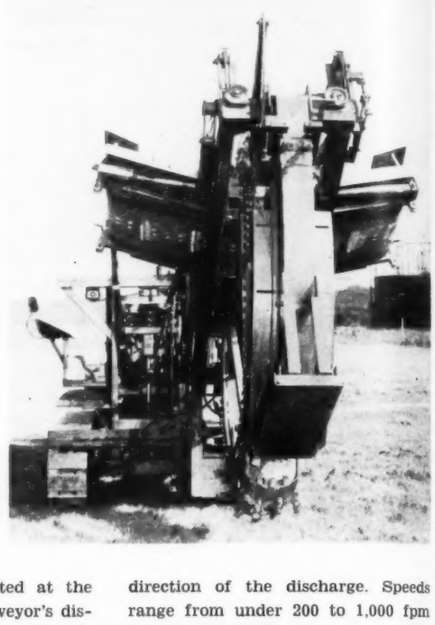
Four new wheel-type trenchers, including one with a digging wheel boom which may be shifted laterally up to 30 inches to either side of the machine's center line, have been announced by the Cleveland Trencher Co.

The new models, together with improved machines in the manufacturer's existing line of trenchers and backfillers, were demonstrated for trade press editors at a recent preview at the company's Cleveland plant.

Designated Models J-20, J-30, J-40, and JS-30, the new machines have a 5-foot 6-inch digging depth and varying digging widths.

Features include a V-shaped discharge conveyor said to provide maximum clearance under the digging wheel rims, as well as allowing higher-heaped loads without clogging, and passage of larger stones. It also provides a constant angle of elevation for the conveyor, regardless of the position to which the conveyor is shifted, and simplifies the addition of extensions to the conveyor for truck loading and other special spoil-handling requirements.

According to the manufacturer, at the touch of levers located at the operator's station the conveyor's discharge speed can be varied, the direction of the discharge reversed, and the entire conveyor shifted to either side without interrupting the digging action of the wheel or the progress of the trencher on its crawlers.



The Model JS-30 has all the features of the other new Clevelands, plus power-shifting and tilting of its digging wheel and power-lifting and lowering of its crumbing shoe. All action is lever-controlled from the operator's seat.

The conveyor drive is through a hydraulic motor and planetary-gear assembly self-contained within each conveyor end-pulley. This dual drive, completely independent of all other drives, entirely eliminates chains, sprockets, and exposed gears, providing maximum power transmission to the belt at all times, regardless of the position of the conveyor or direction of the discharge. Speeds range from under 200 to 1,000 fpm in either direction.

In addition to the features of the other models, the Model JS-30 has a digging wheel boom that can be shifted to dig behind the center line of either crawler or at any point between. The unit's digging wheel can also be automatically tilted, from the operator's seat, as much as 6½ degrees to either side of vertical. The crumbing shoe is hydraulically raised and lowered.

For further information write to the Cleveland Trencher Co., Dept. C&E, 20100 St. Clair Ave., Cleveland, Ohio, or use the Request Card at page 18. Circle No. 105.

For further information on any product described in this section, circle the indicated number on the Request Card that is bound in at page 18.

Turner Construction Co., of Sioux Falls, S. D., Proves New Shoring Idea . . . Saves Time and Money Building Two Box Girder Bridges

6"x6" Timbers Used for 1st Time WITH ELLIS Methods!

Whether You're Building Bridges or Industrial Buildings . . .

Ellis Makes The Right Clamp for Your Job!

SHORING FOR ALL TYPES OF SUSPENDED REINFORCED CONCRETE JOBS NOW DONE BETTER

. . . with versatile Ellis Methods. For most jobs the standard 4 x 4 Ellis Shore s best, but when the job calls for heavier wood members, it's easy to go to larger Ellis Clamps. This allows for greater load per shore or more span between shores as needed for a particular job.

On twin bridges in South Dakota, the Turner Construction Co. effected time-and-material savings in erection and removal of forms, using 6 x 6's with Ellis Methods, instead of other methods used previously. These savings can be yours—write today!

ELLIS MFG. CO. Inc.
211 N.W. 4th, Okla. City:
Send me, without obligation, information on shoring for bridges, buildings, and other structures.
Name .....
Address .....
City ..... State .....

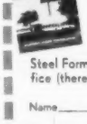
Ellis MFG. CO., INC.
211 N.W. 4TH STREET • OKLAHOMA CITY, OKLA.

For more facts, use Request Card at page 18 and circle No. 325

EFCO STEEL FORMS
speed-up concrete forming

EFCO Steel Forms used on Brandeis University Library to save time, labor, material. Forms quickly lock together with a simple twist of a clamp. Easily aligned. Lifetime steel faces. Low original cost. Free form erection drawings for each project.

OTHER FORMS ON A RENTAL BASIS



Economy Forms Corp.
Box 128-E, H. P. Station
Des Moines, Iowa

Please send catalog on EFCO Steel Forms, and address of nearest sales office (there are 24 coast-to-coast).

Name _____
Firm name _____
Street address _____
City _____ State _____

For more facts, use coupon or circle No. 326

CONCRETE TESTERS

The World's Finest Low-Cost Precision Testers

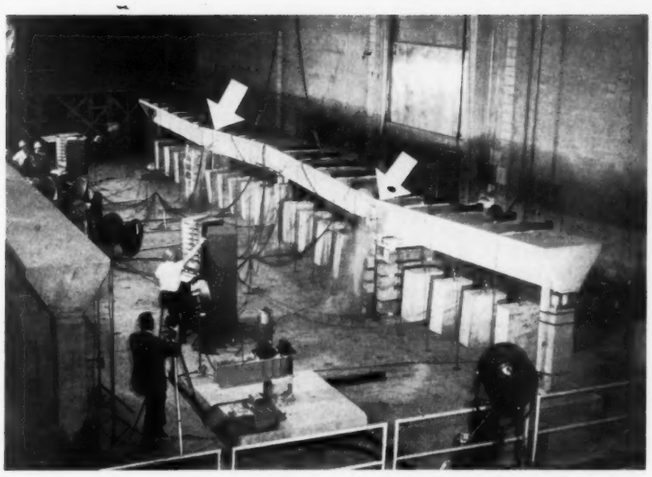
For CYLINDERS CUBES BLOCKS BEAMS PIPE

IF IT'S A CONCRETE TESTER YOU NEED-GET IN TOUCH WITH

FORNEY'S, Inc.
TESTER DIVISION
P. O. BOX 310 · NEW CASTLE, PA.

For more facts, circle No. 327

Unique laboratory tests structural concrete units

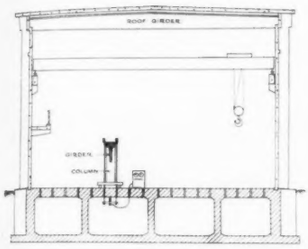


A 66-foot-long prestressed-concrete bridge girder snaps in two places (see arrows) during a test to destruction at the Portland Cement Association's new Structural Laboratory. Visiting editors saw the beam fail under an 87,000-pound load—seven times the designed load capacity. Note rods connected to yokes across top of beam and extending through holes in floor.

The world's largest "testing machine" has been put into operation by the Portland Cement Association at its Research and Development Laboratories in Skokie, Ill.,

Designed for testing a variety of precast and prestressed structural concrete members, the "machine" is actually a 3-story precast-concrete building.

The key to the new building's function as a testing machine is the 56 × 120-foot testing floor. It is designed to act as a hollow concrete box girder in the longitudinal direction and as a Vierendeel girder in the transverse direction. The over-all depth of this girder is 12 feet, with the 24-inch-thick top floor slab joined to the basement floor slab by 8½-foot-high webs.



Cross-section view of PCA's Structural Laboratory, showing how box-girder-type floor is used in load test on concrete beam. Hydraulic jacks beneath first floor pull down on rods extending through floor, thus applying load to test beam above.

The first-floor slab is pierced by a total of 690 holes, on 3-foot centers, by means of which loads are applied and test specimens secured. In a test, steel rods are attached to the test beam or girder on the first-floor slab and extended downward through the holes to connect with hydraulic jacks located in the basement. These jacks pull down on the rods, exerting loads on the test structure above.

Loads up to 30,000 pounds per square foot for floor slabs or roof shells and total loads to 2 million pounds for beams or girders are possible with the testing floor.

The new Structural Laboratory, which also houses offices and shops at one end, is constructed of precast-concrete elements from the first floor up. The 58-foot roof girders are supported on columns cantilevered from the foundation. Tilt-up wall panels feature decorative textures and patterns obtained by using plastic and rubber form liners in the casting operation. Lightweight concrete was used in these wall panels.

Part of a $3 million expansion program at the Portland Cement Association's Research and Development Laboratories, the Structural Laboratory is expected to produce information having a far-reaching effect on design and construction of various concrete structures.

A second laboratory, the PCA's Fire Research Center, will be placed in operation early in 1959.

MAKE BIG MONEY IN PAVING!

NEW LOW COST ALL-PURPOSE ROLLER LETS YOU START WITH SMALL INVESTMENT

Cash in on the tremendous demand in the paving field. The General all-purpose, heavy duty, power operated roller lets you pave asphalt driveways and walks, parking lots, service stations. Roll lawns, tennis courts, playgrounds, parks and municipal properties. The General all-purpose roller is time tested and job proven — built to take a beating and withstand years of rugged service. Features a new automatic transmission with full reverse to give complete maneuverability in tight spaces. Simple, foolproof, adjustable weight control lets you roll anything from blacktop driveways to highways with equal ease. Exclusive fingertip operation of all controls on a single lever — brake, transmission and throttle. High curb clearance allows precision rolling close to buildings and obstructions. Hinged hood permits ready accessibility to automatic transmission and engine for easy service and maintenance. General machines now in use the world over testify to their durability, efficiency, economy, and trouble-free operation. Write or call for full information.

ONLY $995 f.o.b factory

WORKS ALL YEAR 'ROUND ON MANY DIFFERENT JOBS

A roller lets you take jobs all year 'round. Customers are everywhere — home owners, landscapers, municipal governments. Has all the features found in rollers costing twice as much: Oversized water tank with individual controls both with compression and guide roll — with dual scrapers and large cocoa mats. A real professional contractor's roller that enables you to take ANY JOB. Write or call for full information.

DEALERS!
WRITE – WIRE – PHONE
Mr. McCaughey
Choice Territories Still Open
Tilden 5-5401

LOOK AT ALL THESE FEATURES

Rolls full 32". Fully automatic reversing transmission. Ruggedly constructed. Heavy duty front forks made of ½" plate. Main frame ⅜" plate. Maximum weight over 2000 lbs. Oversize water tank at no extra cost. Cocoa mats and scrapers both rolls included.

GENERAL ENGINES CO. ROUTE 130, THOROFARE, N. J. • CALL TILDEN 5-5401

For more facts, use Request Card at page 18 and circle No. 328

Maintain traffic while laying shoulder material and back-filling

POWER-PACK is a multi-purpose machine that gets jobs done fast

There's no need to stop or delay traffic when you use POWER-PACK for back-filling and shoulder work. Its working width of less than 12' permits you to maintain traffic without slowing down your work. Contractors, state and county highway crews have found POWER-PACK also speeds up jobs and pays for itself in one season. ***Send for complete details now!***

- Conveyor quickly changed for right or left discharge
- Spreads sand, stone or hot mix
- Minimizes manual clean-up
- Requires only one operator
- Frees larger equipment for other work

POWER-PACK CONVEYOR CO.
836 E. 140th St. - GLenville 1-7670 - CLEVELAND 10, OHIO

For more facts, use Request Card at page 18 and circle No. 329

Product LITERATURE

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Portable generator set—a brochure on the design, engineering, and construction features of the Allis-Chalmers Model G-226 portable, lightweight generator set. Includes sketches of the unit in use, engine cutaways, and photographs of numerous important components. Specifications of the basic generator set also included. Catalog BU-412.

Write to the Allis-Chalmers Mfg. Co., Engine-Material Handling Division, Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 21.

Concrete buggy—a fact sheet on the Prime-Mover Model M30 18-cubic-foot-capacity power truck. Includes several on-the-job photos and two dimensional drawings. Specifications.

Write to the Prime-Mover Co., Dept. C&E, Highway 61E, Muscatine, Iowa, or use the Request Card at page 18. Circle No. 62.

Steam cleaner—literature describing the Northeast Model A90 Vapor Jet cleaner. Stresses the unit's simplified design, full portability, fuel economy, versatility, and long work life. Photos and specifications.

Write to Northeast Industries, Inc., Dept. C&E, 282 Greenwood Ave., Midland Park, N. J., or use the Request Card at page 18. Circle No. 116.

Materials heater—literature on the Chattanooga materials heater. According to the literature, in one portable unit the heater replaces a boiler or oil heater, material tanks, oil tanks, water tanks, piping, and pumps. The unit is also said to reach operating temperature within one hour from cold start.

Write to the Industrial Boiler Co., Dept. C&E, P. O. Box 9133, Chattanooga, Tenn., or use the Request Card at page 18. Circle No. 101.

Guardrail design kit—a design kit explaining and simplifying the problems of guardrail applications. All details clearly presented on separate sheets for easy use at the drawing table. Kit will fit standard files.

Write to the Metal Plate Guard Rail Division, Steel Processing & Distribution Co., Dept. C&E, 6466½ Gayhart St., Los Angeles 22, Calif., or use the Request Card at page 18. Circle No. 124.

Equipment color chart—a descriptive color chart showing original fleet colors, available in Limco automotive synthetic enamel for all popular makes of trucks and construction machinery. Gives tips on proper application of automotive finishes and describes the Limco line of products for vehicle and equipment maintenance.

Write to Limbacher Paint & Color Works, Inc., Dept. C&E, 515 Homestead Ave., Mount Vernon, N. Y., or use the Request Card at page 18. Circle No. 84.

Demolition, digging tools—a catalog of the complete Ingersoll-Rand line of demolition and digging tools and accessories. Includes a handy wall chart for quick reference on reforging, sharpening, and the proper method of hardening these tools. A special section on safety tools of forged beryllium copper for use where sparks cannot be tolerated. Form 4190.

Write to the Ingersoll-Rand Co., Dept. C&E, Phillipsburg, N. J., or use the Request Card at page 18. Circle No. 74.

Automotive safety lighting—a catalog showing the complete Dietz line of automotive lighting and safety equipment. Includes pictures, dimensions, and specifications on turn signals, mirrors, stop lights, clearance and marker lights, flare kits and extinguishers, searchlights, spotlights, and fog lights for trucks and tractors. Catalog No. 56.

Write to the Automotive Lighting Division, R. E. Dietz Co., Dept. C&E, 225 Wilkinson St., Syracuse 1, N. Y.,

Rosco Roller owned by Jay W. Craig Co., Minneapolis, on job at Aitkin, Minn.

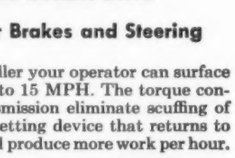
Increase Operator Efficiency and Produce More Work Per Hour with the ROSCO ROLLER SR-9-T2

★ Torque Converter ★ Reverse-Omatic Drive

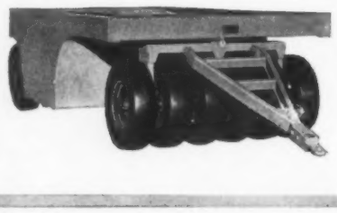
★ Constant Speed ★ Power Brakes and Steering

With this improved 9 wheel self-propelled roller your operator can surface nearly a 6 foot width at working speeds up to 15 MPH. The torque converter and Reverse-Omatic clutch and transmission eliminate scuffing of the surface. Power steering and a throttle setting device that returns to manual at a touch reduce operator fatigue and produce more work per hour.

A modern large-bore, short-stroke engine produces a surplus of power and travel speeds to 30 MPH. Water compartments are integral with the body and other components are set low for safe center of gravity and operator visibility. These features and Rosco's quality construction make the SR-9-T2 a solid investment and profit maker.



Rosco Roller SR-9-T2 with water attachment



Models CR9 and CR13

9 or 13 wheel tow-type rollers, 90 and 120 cubic feet capacity.

ROSCO MINNEAPOLIS **ROSCO MANUFACTURING CO.**
3118 SNELLING AVE. • MINNEAPOLIS 6, MINNESOTA

For more facts, use Request Card at page 18 and circle No. 330

Used H3 Bucyrus, mounted on model L160 IHC truck chassis with individual truck cab. Crane complete with hydraulic clam shell and tagline. Also, 29" magnet with Onan 5,000 watt, 220 volt, 21.8 amp. motor generator, including retriever reels, tagline, etc. Truck chassis has 2200 miles. Tire size 8-¼ x 20 ten ply with hydraulically operated outriggers. Hydrocrane includes telescoping boom with totally enclosed crane cab. *All in excellent condition and available for inspection.* WELLS MANUFACTURING COMPANY, Skokie, Illinois, J. T. Moore.

STOP that WATER

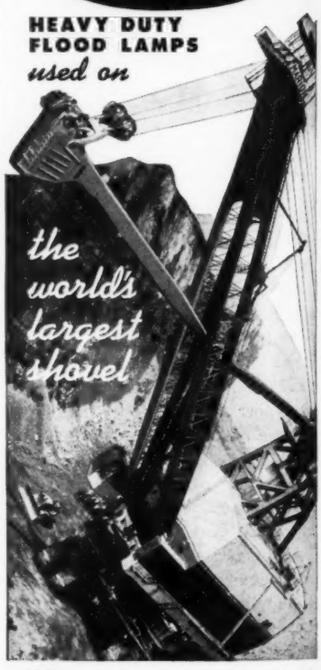
A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—hold 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs. Applied quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.

HAYNES PRODUCTS CO., OMAHA 3, NEBR.
With FORMULA No. 640

Thirty-six

STURDILITE

HEAVY DUTY FLOOD LAMPS *used on*

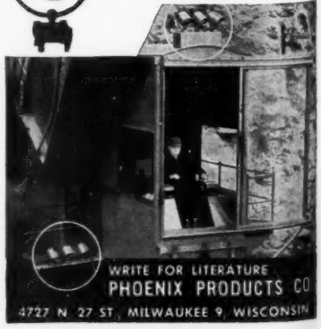


Whether it's this colossal Marion shovel with a 70 cu. yard bite, or medium size or small machines, STURDILITES are providing better light, longer lamp life, at lower cost, for users of all types of mobile mining and construction equipment.

STURDILITES are recognized the world over as standard equipment where vibration, shock and generally rough treatment present lighting problems.

High and low voltage models for every requirement. If not available at your dealer write direct for complete information.

* Trade Mark Registered



For more facts, circle No. 331

To obtain the literature described on this page —
write direct to the manufacturer or circle the designated number on the Request Card at page 18.

or use the Request Card at page 18. Circle No. 121.

Scaffolding equipment—a catalog on steel trestles and scaffolding accessories for use in light construction and maintenance. Photos, drawings, etc. Catalog M-R.

Write to The Patent Scaffolding Co., Inc., Dept. C&E, 38–21 12th St., Long Island City 1, N. Y., or use the card at page 18. Circle No. 118.

Rotary truck pumps—a revised bulletin on the complete Blackmer line of rotary truck pumps with capacities from 25 to 725 gpm operating at discharge pressures to 100 psi. Specifications. Bulletin 200.

Write to the Blackmer Pump Co., Dept. C&E, 1809 Century Ave. S.W., Grand Rapids, Mich., or use the Request Card at page 18. Circle No. 128.

Temporary shelter—a brochure on Capitol Products Corp.'s 57-foot-diameter 16-foot-high aluminum-strut dome structure. According to the literature, the dome is erected in eight man hours, will withstand hurricane winds, and can be relocated simply by lifting or moving by crane or helicopter.

Write to the Capitol Products Corp., Dept. C&E, Mechanicsburg, Pa., or use the Request Card at page 18. Circle No. 122.

Ready-mix plants, trucks—a booklet describing the complete Refco line of bulk-handling equipment, including ready-mix concrete plants, cement trailers and trucks, and other units. Illustrated with photographs.

Write to the Rig Engineers & Fabricators Co., Inc., Dept. C&E, P. O. Box 7634, Houston 7, Texas, or use the Request Card at page 18. Circle No. 119.

Air-cooled diesels—a folder detailing Lister air-cooled diesel engines, Types LD and SL. Covers five different models. Complete specifications; data on optional extras. Illustrated with photographs and a dimensional drawing.

Write to Lister-Blackstone, Inc., Dept. C&E, 42–32 21st St., Long Island City 1, N. Y., or use the Request Card at page 18. Circle No. 117.

Joists—a catalog on Haven-Busch T-Chord Longspan joists. Data on accessories and application. Well illustrated with on-the-job photographs, drawings, graphs, charts, and helpful load tables for joists in sizes from 22 to 76 inches.

Write to the Haven-Busch Co., Dept. C&E, 3443 Chicago Drive S. W., Grandville, Mich., or use the Request Card at page 18. Circle No. 127.

Construction staking—a booklet on the use and application of solid steel stakes and accessories. Describes a new way to stake, spread, splice, and brace forms for flat work, footings, curbs, shallow walls, and many other applications. Also shows how a combination of metal parts will increase wood-form efficiency with simplified installation and removal.

Write to the Dee Concrete Products Co., Dept. C&E, 670 N. Michigan Ave., Chicago 11, Ill., or use the Request Card at page 18. Circle No. 125.

Conveyor pulleys—a catalog describing the Ful-Grip line of solid steel conveyor pulleys. Included in the line are both interchangeable bushing and fixed bore pulleys with face widths up to 148 inches. Catalog CV-1.

Write to the Maurey Mfg. Corp., Dept. C&E, 2915 S. Wabash Ave., Chicago 16, Ill., or use the Request Card at page 18. Circle No. 126.

Concrete placers—a folder listing the features and benefits of Airplaco Models CP-10 and CP-15 concrete placers. Also gives specification data on the firm's line of concrete-placement tubing and accessories. Illustrations include on-the-job photos.

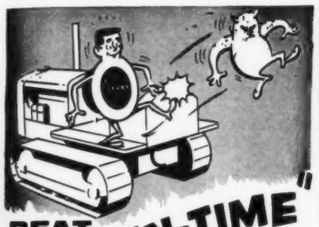
Write to the Air Placement Equipment Co., Dept. C&E, 1005 W. 24th St., Kansas City 8, Mo., or use the card at page 18. Circle No. 89.

Power plants—literature describing Cyclohm power plants offered in wattages from 350 to 2,000. Gives details and specifications for the 350, 1,000, and 2,000-watt models. Photographs illustrate the text.

Write to the Cyclohm Motor Corp., division of Howard Industries, Inc., Dept. C&E, 1760 N. State St., Racine, Wis., or use the Request Card at page 18. Circle No. 120.

Scaffolding—a brochure describing Saf-T light and heavy-duty steel scaffolding and accessories. Includes simplified explanation of scaffolding principles and design. On-the-job photos.

Write to the Saf-T Scaffolding Co., Dept. C&E, 2728 N. Second St., Philadelphia 33, Pa., or use the Request Card that is bound in at page 18. Circle No. 123.



BEAT "DOWN-TIME" WITH Hobbs HOUR METERS

For better performance and longer service, get protective maintenance done ON TIME! Hobbs Hour Meters indicate to the HOUR and MINUTE when maintenance and service functions are due — at a glance.

FOR DIRECT CURRENT

Indicates operating time on all types of equipment powered by internal combustion engines — gasoline or diesel. Tells when lubrication, oil and filter changes, overhaul, etc. are due. Not a revolution counter, but a true electric timing instrument. Ruggedly built . . . easy to install . . . reads at a glance.

FOR ALTERNATING CURRENT

Indicates operating time of any equipment powered by alternating current — motor generating sets, conveyor systems, etc. Small, compact, easy to install. Designed and built for years of service.

●Distributors in Principal Cities
WRITE FOR CATALOG 600

JOHN W. Hobbs CORPORATION A DIVISION OF STEWART SW WARNER
2067 YALE BLVD.
SPRINGFIELD, ILLINOIS

For more facts, circle No. 332

BREAKER BALLS
of Ni-Hard and Semi-Steel

SPEED BREAKING, CRUSHING and DEMOLITION JOBS

Eagle Breaker Balls available of tough semi-steel for regular jobs, and of abrasion resistant Ni-Hard nickel-chromium-iron alloy for toughest jobs. Pear shaped, with easily replaced hook. In five sizes: 1500 lbs. to 6500 lbs. (Ni-Hard up to 4000 lbs. only). Spherical or Drop Ball available for use with cranes equipped with electro-magnets.

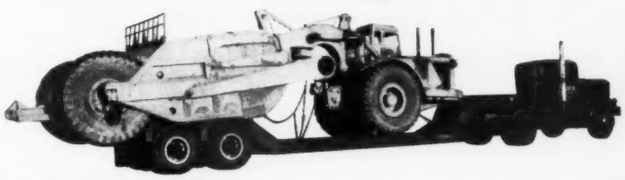
SINCE 1872
EIW
EAGLE IRON WORKS

SEND FOR BULLETIN 558
Describes Breaker Balls. Bulletin 1255 covers Eagle Pile Hammers and Line Weights. Catalog 58 gives complete information on Eagle Washing-Classifying-Dehydrating Equipment for aggregate, stone and ore.

EAGLE IRON WORKS,
159 Holcomb Avenue, Des Moines, Iowa.

For more facts, circle No. 333

TIME AND MONEY SAVERS... BY Dorsey



MODEL HTS (Capacities 15 to 35 tons)—Although as much as a ton lighter than other trailers of comparable capacity, high-tensile steel main channels and close-spaced all-welded cross members give the HTS superior strength and ruggedness. Flat gooseneck provides support for blades and other loads.

HYDRAULIC DUMP TRAILER—Frameless design adds thousands of pounds of payload capacity to the Dorsey Dump Trailer, and it's ruggedly built to stand up under the extra tonnage it can haul.

Heavy-duty telescopic hoist is placed at the extreme front to utilize the tilt principle instead of lift, reducing strain and wear on hoist and hydraulic system.

High-strength steel arms stabilize the unit when dumping. During last degrees of lift, tandem front wheels are raised and weight rests solidly on rear axle with springs out of action.

REMOVABLE GOOSENECK MODEL RG (Capacities 15 to 35 tons)—Dorsey's patented hydraulic system makes one-man operation a practical reality, which means a driver can load and deliver self-propelled equipment without assistance.

A self-contained hydraulic power unit is now standard on the RG, which means it can be pulled by any tractor.

20" tires and full spring tandems are also standard, making RG ideal for highway operations as well as on rough terrain.

Deck can be raised or lowered while loaded and in transit to pass over or under obstructions.

DORSEY TRAILERS
ELBA, ALABAMA

For more facts, use Request Card at page 18 and circle No. 334

INDEX TO ADVERTISERS

Acker Drill Co., Inc. 80
Allis-Chalmers Mfg. Co. Insert at pg. 42 & pp. 32, 33, 67, 69, 71
Allison Div., GMC 108
Alloy Rods Co. 66
American Air Filter Co., Inc. 40
American Cyanamid Co. 99
American Manganese Steel Div. .. 104
American Steel & Wire Div. .. 106, 107
Associates Discount Corp. 6
Atlas Copco 68
Austin Western, Constr. Equip. Div., Baldwin-Lima-Hamilton Corp. 48, 49
Baldwin-Lima-Hamilton Corp. ... 57
Barber-Greene Co. 120
Barco Mfg. Co. 42
Barnes Mfg. Co. 109
Bethlehem Steel Co. 56, 96
Black & Decker Mfg. Co. 72, 89
Browning Mfg. Co. 84
Brunner & Lay, Inc. 101
Bucyrus-Erie Co. 35
Calweld, Inc. 25
Caterpillar Tractor Co. .. 7, 14, 22, 23
C.I.T. Corporation 46, 47
Clark Equipment Co. ..... 4th Cover
Clement-Braswell, Inc. 11
Cleveland Trencher Co. 113
Clinton Engines Corp. 92
Clyde Iron Works, Inc. 54
Colorado Fuel & Iron Corp. .. 85, 100
Concrete Surfacing Machinery Co. . 110
Continental Motors Corp. 102
Cummer & Son Co., F. D. 64
Curtiss-Wright Corp., South Bend Div. 19
Dana Corp. 65
Denison Engineering Div. 61
Diamond Chain Co., Inc. 15
Dixon Valve & Coupling Co. 119
Dodge Corp., F. W. 86
Dorsey Trailers 117
Dudgeon, Inc., Richard 111
Eagle Iron Works 117
Economy Forms Corp. 114
Eimco Corp. 10
Ellis Mfg. Co., Inc. 114
Euclid Div., GMC 58, 59
Firestone Tire & Rubber Co. 34
Ford Div., Ford Motor Co. 30, 31
Forney's, Inc. 114
Funk Mfg. Co. 118
Galion Iron Works & Mfg. Co. 83
General Engines Co. 115
Goodyear Tire & Rubber Co. 5
Greenlee Tool Co. 119
Greenville Steel Car Co. 78
Gulf Oil Corp. ..... Insert at pg. 61
Hendrix Mfg. Co., Inc. 70
Highway Trailer Co. 98
Hobart Brothers Co. 119
Hobbs Corp., John W. 117
Hoffman Bros. Drilling Co. 95
Hough Co., Frank G. 26, 27
Hydraulic Machinery Co. 112
Ideal Reel Co. 79
Ingersoll-Rand Co. 97
Insto-Gas Corp. 118
International Harvester Co. 28, 29, 76, 77
Iowa Mfg. Co. 20
Jaeger Machine Co. 84
Kim Hotstart Mfg. Co. 112

DIG FAST!

SHAWNEE.

"88" BACKHOE and SPECIAL Heavy Duty LOADER

Economy Priced!

Today's fastest backhoe. Digs 12' deep, dumps at 9'9", swings 188°. This hard-working tool reduces costs, requires minimum maintenance — it is versatile and moves easily from location to location. Built by the pioneer of the hydraulic backhoe.

Send for specifications and prices.

Loader Attachments:

Various sizes Utility and Material Buckets, Snow Bucket, Angle Dozer Blade, Bulldozer Blade, Crane Hook, Fork Lift, Manure Fork and Street Broom.

Serving in many industries all over the world.

SHAWNEE MANUFACTURING CO., INC.

1947 M-N. Topeka Ave. • Topeka, Kansas

For more facts, circle No. 335

WACHS *Portable*

POWER AND MANUAL PIPE CUTTERS

2" TO 72" CAPACITY

WACHS GUILLOTINE SAW
2" to 8" Capacity
Electric or Air Drive

"BIG" GUILLOTINE SAW
10" to 16" Capacity

WACHS CHICAGO

WACHS NATIONAL SAW
"The milling machine on wheels"
Cuts 10" to 72" Pipe

WACHS STRICKLER RATCHET CUTTER
"Lathe Type Cuts"
5 sizes—2½" to 24" Capacity

Write for descriptive bulletins

THE E. H. WACHS COMPANY

Manufacturers of Engines, Valves and Machinery since 1893

1525 NORTH DAYTON STREET · CHICAGO 22, ILLINOIS

For more facts, circle No. 337

***For* Smooth Performance**

ON ALL WINTER JOBS

USE INSTO-HOT® PORTABLE LP-GAS HEATERS

- Salamanders
- Infra-Red Heaters
- Blower Heaters

Clean, economical, dependable heat to keep construction work UP when the temperature goes DOWN. Get the facts and you'll get **INSTO-HOT.** Mail coupon today.

NAME _____ C&E

ADDRESS _____

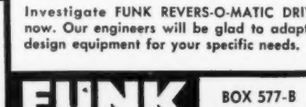
INSTO-GAS CORP. • **Detroit 7, Michigan**

For more facts, use coupon or circle No. 336

FUNK *revers*O*matic* DRIVES

HYDRAULIC CONTROLLED REVERSING CLUTCH with TORQUE CONVERTER

For Instant Movement of Loads FORWARD and REVERSE or LIFT and LOWER



Other Funk Products

Funk Standard Power Take-Off

Funk Gear Reduction

FUNK REVERS-O-MATIC DRIVES are years ahead in engineering. A single throttle lever moved forward or reverse engages hydraulically actuated clutch and instantly changes your speed and direction of travel. No direct connection between power and load to stall your engine. The torque multiplies power smoothly, reducing maintenance.

Investigate FUNK REVERS-O-MATIC DRIVES now. Our engineers will be glad to adapt or design equipment for your specific needs.

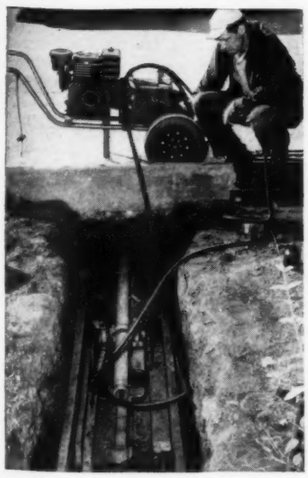
FUNK MFG. CO. BOX 577-B COFFEYVILLE, KANSAS

For more facts, circle No. 338

Kotal Co. 73
Kwik-Mix Div., Koehring Co. 37
LeTourneau-Westinghouse Co. 51, 53, 55
Lima Works, Constr. Equip. Div., Baldwin-Lima-Hamilton Corp. .. 57
Lincoln Electric Co. 73
Lufkin Rule Co. 103
Mack Trucks, Inc. 75
Maginniss Power Tool Co. 80
Massey-Ferguson Industrial Div. .. 18
Mayo Tunnel & Mine Equipment . 108
McConnaughay, K. E. 88
McKiernan-Terry Corp. 88
McKinney Drilling Co. 104
McKissick Products Corp. 90
Meadows, Inc., W. R. 81
Mechanics Universal Joint Div. .. 41
Miller Tilt-Top Trailer Co. 78
Mobile Office, Inc. 112
Monarch Road Machinery Co. 72
Naylor Pipe Co. 82
New England Carbide Tool Co. ... 93
Oliver Corp. 105
Owen Bucket Co. 95
Parsons Company 36
Phoenix Products Co. 116
Pitman Mfg. Co. 111
Plant City Steel Corp. 102
Power-Pack Conveyor Co. 115
Richmond Screw Anchor Co., Inc. . 100
Rivinius, Inc. 92
Rockford Clutch Div. 79
Rodgers Hydraulic, Inc. 110
Rogers Brothers Corp. 93
Rome Plow Co. 113
Rosco Mfg. Co. 116
Saf-T-Boom Corp. 111
Salem Tool Co. 72
Shawnee Mfg. Co. 118
Simplicity System Co. 24
Sinclair Refining Co. 91
Smith & Co., Inc., Gordon 94
Spray Products Corp. 109
Stanco Mfg. & Sales, Inc. 92
Stoody Co. 16
Superior Concrete Accessories, Inc. 52
Swenson Spreader & Mfg. Co. 99
Swick-Guth Co., Inc. 109
Sylgab Steel & Wire Corp. 103
Symons Clamp & Mfg. Co. 83
Templeton, Kenly & Co. 81
Texas Co. (Asphalt) ..... 2nd Cover
Texas Co. (Lubricants) 8, 9
Twin Disc Clutch Co. 74
Unit Crane & Shovel Corp. 17
U. S. Steel Corp. 45
U. S. Steel Subsidiaries .. 45, 106, 107
Van Brush Mfg. Co., Inc. 108
Viber Company 25
Wachs Co., E. H. 118
Wagner Electric Corp. 88
Waukesha Motor Co. 101
Wheeling Corrugating Co. 60
Whiteman Mfg. Co. 21
Wickwire Spencer Steel Div., CF&I Corp. 85, 101
Winslow Scale Co. 105
Wisconsin Motor Corp. 94
Wisconsin Trailer Co. 96
Yale & Towne Mfg. Co. .... 3rd Cover

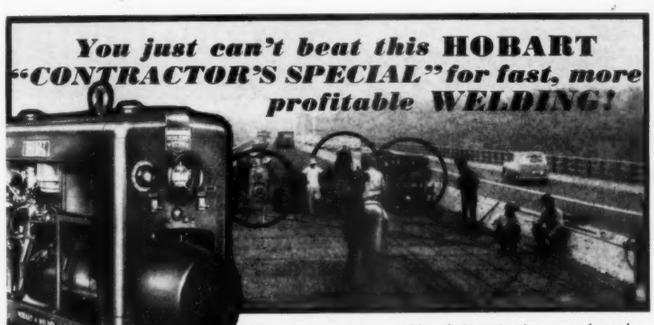
WHY BURY MONEY IN NEEDLESS STREET PATCHES?

GREENLEE Hydraulic Pipe Pushers like the one shown below quickly install pipe under streets with a minimum of ditching and backfilling and *no damage to roadbeds or pavement!* A GREENLEE Pipe Pusher cuts job time and costs to a fraction. Can pay for itself on the first job — *usually* does on the first *few* jobs. Model shown pushes 3/4" to 4" pipe about 2 ft per minute with power pump. Larger unit available for larger pipe and concrete sewers. Instead of another useless street repair job, invest the same money in a valuable time-saving, worksaving GREENLEE Pipe Pusher! Write today for free literature.



TOOLS FOR CRAFTSMEN
GREENLEE

GREENLEE TOOL CO.
2271 Columbia Avenue
Rockford, Illinois
For more facts, circle No. 339



Gas Drive Husky Boy

AC Welder/AC Power Weldmobile

When it comes to a welder that contractors can depend on to do a top job anywhere, any time, you can't beat a Hobart. Specially designed to meet the varying conditions and requirements of in-the-field welding. Compact, light weight, and with a hot fast arc and lots of engine power. A Hobart can save you hundreds of dollars on repairs and construction work. Send in the coupon and very quickly you'll get the complete story from us—no obligation. HOBART BROTHERS CO., BOX 8118, TROY, OHIO, Ph. FEderal 2-1233. Manufacturers of the world's most complete line of arc welding equipment.

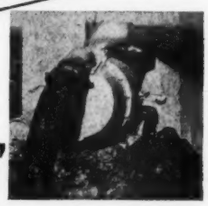
HOBART TROY OHIO WELDERS

New **HOBART** ***"Rocket 24"*** *iron powder electrode!*
New and faster. Designed to keep pace with faster production and lower cost welding with excellent results. To be convinced, just try some.

HOBART BROTHERS CO., BOX 8118, TROY, OHIO
Send information on: _____ ampere capacity.
☐ Contractor's Special ☐ Husky Boy
☐ Gas Drive ☐ AC Welder/AC Power
☐ Weldmobile ☐ Electrode catalog
☐ Check here for your FREE Weldor's Vest Pocket Guide
Name _____
Firm _____
Address _____

For more facts, use coupon, or Request Card at page 18 and circle No. 340

Most Reliable Connections . . . for Your Suction and Water Hose



"KING" SHANK COUPLINGS

Strong, durable couplings with a reputation for long, reliable service among Contractors and other users of suction and water hose. Although built to take severest on-the-job punishment, they have refinements which contribute to outstanding efficiency and ease of handling . . . absolute uniformity in quality, threading and dimensions . . . well defined, smoothly finished corrugations.

Made in regular and heavy patterns, in all-malleable iron, plain or plated; all-brass; and malleable iron, plain or plated, with brass swivel nut. Sizes range from 1" to 8", inclusive.

Stocked by Manufacturers and Distributors of Industrial Rubber Products

DIXON
Valve & Coupling Co.
GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA.
BRANCHES—CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON
DIXON VALVE & COUPLING CO., LTD., TORONTO Associate Companies
Rockiron Company, Inc., Quarryville, Pa. · Precision Drawn Steel Company, Carteret, N.J.

For more facts, circle No. 341

Surveying washington

by GEORGE RIVEIRE, JR.

Congress to write new airport construction bill

There is talk that Congress next year will quickly write a new airport construction bill, calling for a step-up in funds, and then override the President if he again uses the veto.

The less optimistic, however, think it more likely that the lawmakers will meet administration objections and come up with legislation scaled down in some respects. The threat of a White House veto is always a potent modifying influence.

What is certain is that President Eisenhower's turn-down of the bill has had the effect of suspending construction planning at many public airports around the country. The $63 million allocated for fiscal 1959 was committed to specific projects last spring. There is no indication of how much in additional federal funds will be forthcoming in future years, inasmuch as the current airport program is due to expire next June 30. Faced with this uncertainty, many airport operators are just waiting to see what happens.

In vetoing the bill to boost annual federal grants from $63 to $100 million, the President declared that civil airports are a "local responsibility" and that the time has come for Uncle Sam to start an "orderly withdrawal from the airport grant program".

The White House veto was viewed as especially unfortunate at this time, when airports are in the midst of a giant construction planning program to modernize for the civil jet age. Preparing for jets is just one aspect of the problem. The amazing growth in the number of operating aircraft since 1950 has created a big backlog of needed airport improvement that may become even larger. It is anticipated that by 1975 the capacity of airports will have to double.

Short-term needs appear heavy enough. A national survey shows that airport development over the next four years will require more than $1 billion. Some 45 per cent of the total will have to come from federal sources. The big question is: Will federal money be available?

Highway program may call for federal fuel-tax boost

It is all but certain that the administration will ask the new Congress for a boost in federal fuel taxes to keep the highway program on a current pay-as-you-go basis. The reason: budget difficulties.

The crux of the problem is the imbalance of income and outgo connected with the Highway Trust Fund —the financing instrument of the Road Program. Financing was set up so that over the life of the program there would be a balance between expenditures and the revenues provided by certain highway user taxes.

But the pay-as-you-go principle does not apply over the short term. The income received by the fund and what is spent for highways do not stay even from year to year. In the next several years, as construction climbs to a peak, expenditures will outrun the tax revenues. The opposite will occur later on, as the building pace levels off and vehicle traffic skyrockets.

The poser for the administration is the anticipated increment of expenditures over receipts during the next few years. During this period, the government must either get more tax revenue to finance construction or dip into general funds to make up the difference.

Expenditures from the Highway Trust Fund are already exceeding receipts. The only reason the government has not already been forced to tap general revenues is the presence of a substantial balance built up during the first two years of the fund's existence.

But this balance is fast disappearing. It will be cut in half by next July, and by the end of fiscal 1960 it will have vanished. The fund's deficit will keep growing in succeeding years, perhaps surpassing $3 billion in fiscal 1964.

The odds are that the White House will nod to the wishes of Budget Director Maurice Stans, who wants an additional tax assessment, rather than a dipping into general revenues, to wipe out the expected red ink in the fund's ledger.

But the question remains as to whether Congress would go for an increase in gasoline taxes, boosted substantially just two and a half years ago. At best, such a move would raise all sorts of opposition from road users and other interested groups.

Towed on its own pneumatic tires.
Completely new Model 873 Finisher has proved its superior performance in paving city streets, alleys, parking lots, driveways, playgrounds, highway shoulders, highways and many other jobs.
Barber-Greene
New folding hopper in raised position.
NEW BARBER-GREENE MODEL 873 FINISHER

paves on crawlers . . . travels on rubber

With crawler traction and flotation for the variety of bases encountered in paving all types of jobs—including parking lots, driveways, playgrounds, etc. —and trailed at truck speed on its own hydraulically retractable pneumatic tires, this new finisher includes advancements never before available.

Unmatched tamping, leveling and thickness control principles of the larger Barber-Greene Model 879-B Finisher.

Paves on crawlers. Paving all kinds of jobs, the 873 has crawler traction and flotation for all base conditions—especially less stable bases.

Travels on rubber. Hydraulically lifts itself on pneumatic tires for trailing with its own towing hitch.

New hydraulically folding hopper. Maximum capacity and truck clearance in open position. Sides hydraulically raise to feed automatically. No dead areas. Reduces transport width to 8′.

New simplified controls. Single steering lever. New hydraulic controls for material flow, screed hoist, towing wheels, and folding hopper.

Paving widths from 6′ to 12′ in 3″ increments.

Paving speeds to 50 fpm. Towing speeds to 30 mph. Converts from paving to towing in seconds.

58-47-F

Write for information on this significant advancement in asphalt equipment

Barber-Greene BG
AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 342

Wintertime problems find an easy solution in the Trojan Tractor Shovel. Whether clearing the streets of snow or handling salt, cinders and other ice control materials, the high capacity of the Trojan line gives you economy and speed unmatched by any other method. For areas where snow poses an every day problem, Trojan has a special snow handling bucket, while the enclosed cab protects the operator even in the worst weather. Big city or small town, summer or winter, whatever the job—one of the five Trojan models will meet—and exceed your requirements.

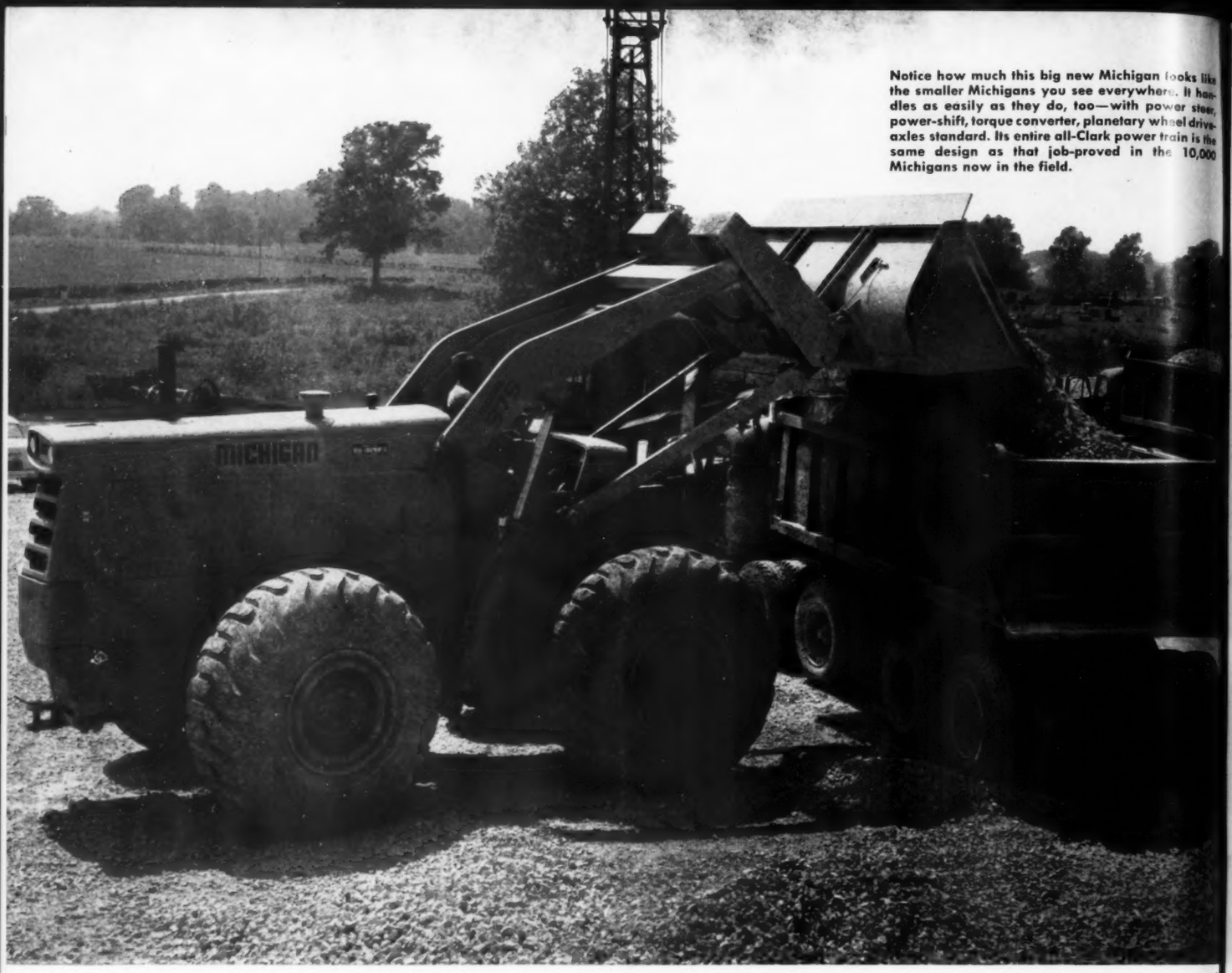
Complete, detailed brochures are now available on the Trojan line. For your material write to Department C-11, Trojan Division, The Yale & Towne Mfg. Co., Batavia, N. Y. or San Leandro, Cal.

TROJAN* *REG. U. S. PAT. OFF.
YALE & TOWNE

TRACTOR SHOVELS
2 & 4 Wheel Drive Front End Loaders

TROJAN DIVISION, THE YALE & TOWNE MANUFACTURING COMPANY, BATAVIA, NEW YORK, SAN LEANDRO, CALIFORNIA

For more facts, use Request Card at page 18 and circle No. 343



Notice how much this big new Michigan looks like the smaller Michigans you see everywhere. It handles as easily as they do, too—with power steer, power-shift, torque converter, planetary wheel drive-axles standard. Its entire all-Clark power train is the same design as that job-proved in the 10,000 Michigans now in the field.

6 YARDS PER PASS

A ten or twelve yard tandem-axle truck loaded in 60 seconds!

Two 23-ton semis heaped in three or four minutes!

Two passes for the smaller truck, five for the two bigger ones combined.

Someone's dream? Not any more! It's been standard practice at Stony Creek Stone Company's pit near Indianapolis for almost two years now. That's when their big 6 *yard* Model 375A Michigan Tractor Shovel went to work.

Stony Creek's problem up until then had been a common one: "How to hold down loading costs, and reduce truck waiting time in the face of rapidly-expanding customer demands." Fast rubber-tired Tractor Shovels had long since replaced cranes and crawler-loaders. The biggest rubber-tired units available, 2¼ yds, were in use. But, production requirements were calling for still more loading capacity. At that point, Company General Manager Dick Irving saw the new 6 yard Michigan. "There," he thought, "is a Tractor Shovel that could give us enough capacity to replace two smaller Tractor Shovels *plus* handle all the expansion we anticipate for years to come."

Michigan output totals 2,500 tons daily

Today, the big Michigan and its *one* operator do the work of *two or more* 2¼ yd Tractor Shovels. Michigan output averages 2,500 to 3,000 tons of crushed limestone every day. "Despite its size, I'd rather run this big Tractor Shovel than any other," says Operator Carroll White. "It handles easily. It moves and responds just as fast as any smaller loader. Its smooth ride sure cuts down on the fatigue you'd expect from a 10-hour day—even though I alone load as much stone as two men did when the pair of 2¼ yard rubber-tired Tractor Shovels were working."

Five passes heap two semis

And that's another reason management prefers the 375A. Higher production! With the smaller machines, operators needed at least four minutes and eight passes to load one 23-ton haul truck. With the Model 375A, operator regularly loads *two* 23-ton semis in the same time or less—in only 2½ passes each. Two-and-a-half passes? It's done like this: Two heaped loads go into the truck. On the third load, precise hydraulic controls let operator hold bucket so only half its load is dumped. That fills one truck. The other half-load is fed into the second truck. Then, two more full loads sends this truck on its way too. Thus: five passes, two truck-loads.

Efficiently loads small trucks, too

Operators even prefer to load *five-yard trucks* with the 6-yard Michigan. Here, the Tractor Shovel bucket is allowed to extend beyond the back end of the truck when dumping. May *sound* wasteful, but before the loaded truck can shift into second, one quick swipe of the Model 375A bucket has cleaned all spillage.

Stony Creek Stone Company figures their big new Michigan has thus cut loading costs "more than 50%." Perhaps 6 yard "bites" can do the same for you. Talk it over with your Michigan Distributor before planning your next job.

Michigan is a registered trade-mark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2407 Pipestone Road
Benton Harbor 10, Michigan
In Canada: Canadian Clark, Ltd., St. Thomas, Ontario

CLARK® EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 344

looks like
ere. It has
power steer,
wheel drive-
train is the
he 10,000

S

ds this
-loads.

ith the
cket is
truck
ore the
wipe of

g new
50%."
Talk it
nning

ANY